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IN THIS ISSUE

Plant Availability	85
World Power Conference—II	87
Festival of Britain. *By E. K. Muir, M.I.E.E.*	93
Personal and Social	96
I.E.E. Elections	99
Views on the News	100
Electrical Contracting. *By H. R. Taunton, A.M.I.E.E.*	101
Anglo-Danish Cable	104
Electricity in the Navy. *By Cdr. (L) F. A. Booth, R.N.*	105
Correspondence	108
B.S.I. Activities	108
Commerce and Industry	109
Recent Introductions	113
Electricity Supply	115
Financial Section	117
Parliamentary News	119
Mobile Film Generators	121
New Patents	123
Consultative Councils	124
Contract Information	125
Classified Advertisements	73
Index to Advertisers	86

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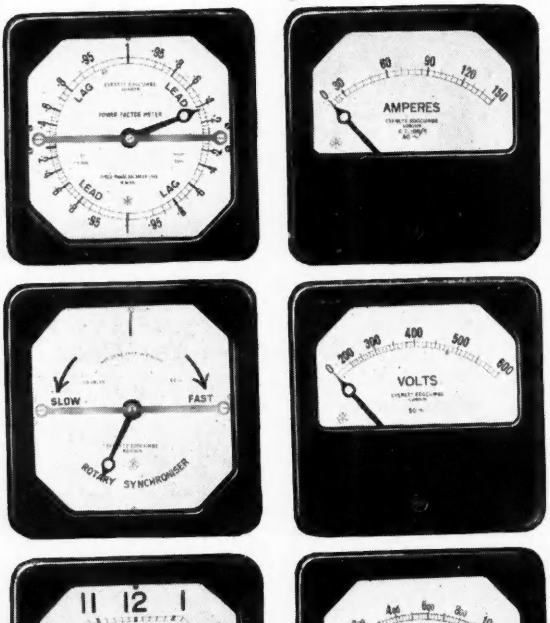

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ELECTRICAL REVIEW

Vol. CXLVII No. 3791 21ST JULY, 1950

THE OLDEST ELECTRICAL PAPER • ESTABLISHED 1872

Plant Availability

CONTINUED PROGRESS

NEXT in importance to the provision of new generating plant is the need to keep the highest possible proportion of existing capacity in commission. This was emphasized by Mr. J. D. Peattie in his Harrogate Convention paper which traced the improvement during the past five years. It is most gratifying to learn that the substantial progress in this respect made early in 1949, as noted in the first B.E.A. report, has been even bettered this year. The reduction from 15.1 per cent in 1948 to 12.1 per cent in 1949 in the average loss of capacity on account of breakdowns and other hazards during January (when the peak load usually occurs) was equivalent to nearly 350,000 kW of additional plant made available. This 3 per cent difference exceeded the total kilowatts installed in either of the two preceding years and was significantly greater than the load shed on the day of the system peak.

Breakdowns and Fuel Quality

Almost all of the improvement noted is attributable to the fewer output capacity hours lost through actual breakdowns and, to a lesser extent, unsuitability of fuel. The two, however, are closely associated and generally some 60 per cent of repairs and maintenance costs in a large modern power station are incurred in the boiler house. On that account enhanced reliability should follow the further activities foreshadowed for the Boiler Availability Committee which, combining the experience of manufacturers and operators, has during the past few years solved many problems introduced by the trend towards larger units and higher steam conditions. Their work has resulted in a considerable extension of steaming periods of boilers between intervals for cleaning heating surfaces.

Overhaul Methods

Recent visits to the United States will no doubt have suggested to engineers ways of adapting to British circumstances, where suitable, some of the methods found successful there for expediting overhaul and maintenance on the lines described by Sir John Hacking last year. The position may be expected to be favourably influenced as new stations replace the old, since nearly a third of the number of turbo-alternators and boilers now running (although a much smaller proportion of the total kilowatt rating) is over 25 years old.

Nevertheless these developments will take time to mature and there are several offsetting factors. One is that up to 40 per cent of plant capacity is undergoing overhaul during the summer months and any delays in the programme may cause critical conditions in a cold autumn. This condition can hardly be improved since the national load factor is steadily rising. There is less trouble now owing to unsuitable fuel, but the policy of using

low grades in power stations, although correct, brings its own difficulties.

Another consideration of importance is that generating plant is becoming less evenly distributed on account of the growing scarcity of good sites. In some congested sections of the grid, too, the output is limited by restricted capacity of the circuits.

Allowance must also be made for the use of generating stations as large-scale laboratories for experimenting with new plant and new techniques, which will no doubt have their share of teething troubles. On balance, therefore, it seems that the margin of spare plant to be aimed for should not be less than the 15 per cent of maximum output capacity regarded in pre-war years as the minimum.

NO ENGINEERING STRIKE

Members of the constituent organizations of the Confederation of Shipbuilding and Engineering Unions have shown good sense in voting in favour of arbitration instead of a strike in their endeavour to secure an increase in wages. The result of the ballot is being reported to the Minister of Labour who will decide how the matter shall be dealt with. With the threat of a strike hanging over the industry the engineering employers were unable to discuss wages and conditions but now the way has been cleared for a resumption of negotiations. Mr. H. G. Brotherton, president of the Confederation, is reported to have attributed the result of the ballot to a desire not to embarrass the Labour Government, but surely it would have been better to have credited the men with a desire not to embarrass the country in these critical times.

NAVAL "ELECTRICS"

Employers are sometimes liable to think rather little of the electrical knowledge and experience gained in the Services but, at least so far as the Royal Navy is concerned, they can be sure that the certificates possessed by men leaving the Electrical Branch indicate a good all-round training. In this issue Cdr. (L) F. A. Booth, R.N., who is intimately connected with this training, sketches the background of naval "electrics" sufficiently to show that rule-of-thumb or sheer brute force are entirely out of place in the modern complicated electrical installation in a warship. Men of the Electrical Branch are trained to become skilled maintenance men and they gain such knowledge as enables them to assist in design of equipment. Employers can therefore accept their certificates as evidence of competence and reliability.

CANADIAN PRODUCTION POLICY

Opinions differ in this country on the relative importance of high efficiency and long life. Instances are quoted, with pride, of ancient machines that are still in service; examples of good British workmanship undoubtedly, but inefficient by modern standards. In some countries abroad this tendency to keep outmoded equipment in use is even more marked. A point made by Mr. James Duncan, chairman of the Dollar Sterling Trade Board, of Canada, writing in the "F.B.I. Review," is that the Canadian buyer of machinery places a lower value on longevity than on immediate efficiency, though this is not to say that lasting quality is not also important. Lower unit costs and greater production per man or machine hour are of special interest. It is expected that new and improved techniques will call for the replacement of the machinery in the not-distant future, the corollary of which is that the majority of Canadian manufacturers are particularly receptive to technical developments.

"ELECTRICAL CONTRACTING"

We have had many inquiries about the availability in book form of the articles on "Electrical Contracting," by H. R. Taunton, which we are publishing as a series. In introducing the series we explained that it was based on Mr. Taunton's book of the same title published before the war. This has long been out of print and we considered it worth while reproducing it in revised form. Limited quantities of the issues in which the instalments have appeared are still available, but those who are interested and are not already regular subscribers should make sure of securing the rest of the articles by ordering the *Electrical Review* in advance.

World Power Conference—II

The Production of Steam Power

A LARGE number of the reports and papers presented at the fourth World Power Conference are very properly devoted to the production of steam power. This most important subject occupies the whole of the great group of papers designated Section E.

The three main divisions of the subject, for the purposes of the Conference, are (1) the elements of power station design, (2) steam generation (boiler design) and (3) turbines and auxiliaries.

There is also a small additional section dealing with the production of steam power by the use of special fuels such as timber, lignite, peat, town refuse, and waste heat from steelworks.

Power Station Design

Papers dealing with this subject came from Switzerland, Portugal, France, South Africa, the Netherlands, Poland and Hungary, as well as Great Britain, so that, except for American practice, a thoroughly representative conspectus is obtained. The French, Polish and Hungarian papers discuss the more theoretical problems, whilst the others cover existing or proposed power stations to meet modern demands.

One of the features of power station design abroad, although not applying to any appreciable extent in Great Britain, is that where a large proportion of the electric power requirements of a country is derived from hydro-electric sources, it is necessary to have, as an accompaniment, a certain proportion of power plant relying on steam or internal combustion engines, so that a sufficient stand-by capacity is available in times when the water supply is reduced, or when there are high peak demands.

In deciding on the sites of power stations, one of the most vital points to consider is the availability of adequate cooling water. In the British paper, by Mr. V. A. Pask, B.E.A., are some extremely interesting maps, including one showing the chief rivers of this country. The most striking thing emerging from Mr. Pask's paper, however, is that suitable sites for future power stations are extremely few. The controversial Bankside power station on the River Thames, which is to be erected just opposite St. Paul's Cathedral, is an example of a site being determined almost willy-nilly by these economic considerations. Increasing use is being made of sewage effluent for cooling; indeed 13 per cent of post-war plant will use it.

In South Africa, cooling water for

Steam Power Session: Mr. E. Bate, Australia; Mr. G. J. T. Bakker, Netherlands, chairman; Sir John Hacking and Mr. J. D. Peattie, reporter

power stations is a major problem. There are few suitable rivers, so that, when near the coast, sea water is used for cooling; sewage effluent is also used, and sometimes water which has previously been pumped through the mines for cooling purposes. In this country, too, there is an instance of the combination of spray cooling with the surface cooling which occurs over large surfaces of effluent ponds. In Poland, it appears to be better from an economic viewpoint to locate the power house on a river and to employ direct cooling, than to choose a site in the coalfields, with cooling towers.

In most papers a high degree of importance is accorded to the choice of the steam conditions to suit a given plant. Great Britain has two sets of temperatures and pressures which appear to be future standards: 600 lb/sq in at 850 deg F; and 900 lb/sq in at 900 deg F. There will be, however, a certain amount of plant built for 1,235 lb/sq in at 825 deg F and 1,500 lb/sq in at 1,050 deg F.

In the Netherlands, an initial pressure of 850-1,000 lb/sq in is favoured at between 895 and 915 deg F. Swiss installations are now being constructed for temperatures up to 2,133 lb/sq in at 968 deg F.

One of the most important fundamental issues in the design of power stations is the relationship between the load and the size of the station. The proportionate size of the boilers and turbines is a further related factor.

Based largely on valuable practical experience, the French paper by M. Ricard puts forward a method of taking into account the various factors which determine the capacity of a station and the optimum sizes of the units in it. An interesting example is worked out, from curves given by the author, for a station of 200 MW capacity and it is shown that the price may range from $8{,}600 \times 10^6$ francs for a station containing two 100 MW sets and two 100 MW boilers to $14{,}600 \times 10^6$ francs for a station having eight 25 MW sets and sixteen 16.7 MW boilers.

Mr. E. E. Parker, U.S.A., opening the discussion on steam power station design

How far these suggestions can be applied here is difficult to decide, owing to the different economic conditions of the two countries. The unfortunate engineer is faced with an even more difficult problem if he takes the Hungarian recommendations, in Sóváry's paper, into account also. The suggested (percentage) ratios of costs in the two papers are:—

	General costs	Turbo-alternators and auxiliaries	Boilers and auxiliaries
Ricard (France) ..	22	45	33
Sóváry (Hungary)	38*	18	44

* This figure includes: Coal handling and transport; piping; re-cooling; electrical equipment, including switchgear; and staff dwellings.

The effect of the size of sets on efficiency is also discussed by Ricard; and both he and Sóváry go deeply into the determination of the correct amounts of firm output capacity and standby capacity which a generating plant should have. Sóváry makes the interesting pronouncement that it is always economically worth while to arrange for interconnection between plants consisting of one boiler and one generating set each. Interconnection is also examined by Ricard, who considers the bearing of the degree of interconnection on the cost and size of a plant. He considers that if a locality has a high load density, it is best to design for several 100 MW groups; for low load density areas, a single unit should suffice.

In South Africa, owing to the narrow gauge (3ft 6in) of the railways, it has been necessary to limit the size to which an alternator can be built—an unusual example of a purely external influence on the design of power station plant.

Great Britain envisages the use of large machines of 100 MW in the future, while 60 MW is already fixed upon as the capacity for a large number of new units, both in this country and in Holland.

Water Power Session: Messrs. F. L. Hintermayer, Austria; R. P. Andrew; T. G. N. Haldane; A. A. Fulton, reporter; J. A. McCrory, Canada, chairman; and P. Scott

Some valuable suggestions towards the achievement of tower power station construction costs may be derived from studying the papers presented at this conference, particularly in regard to the amount of standby capacity, the degree of interconnection, and the adoption of the "one boiler—one generator" principle.

Steam Generation: Boiler Design

There are two main aspects of the papers covering steam-generator design: the proportioning of the boiler itself; and the use of unusual or low-grade fuels. In regard to the actual design of boilers, some very useful information is given in papers by Simonson (who writes for the Water-tube Boilermakers' Association) and by Walter and Haines, in Great Britain, and by Armacost and by Rowand, in the United States. The other papers deal largely with the use of special fuels.

Boiler design is shown to be influenced particularly by economic conditions in Great Britain. Higher availability is greatly desired; and to match the trend towards the use of a few large units, rather than multiple small-size sets, boilers are being made with higher operating steam conditions—up to 1,600 lb/sq in and 1,070 deg F. The use of interstage surface attemperators is to be noted as a means for controlling steam temperature, other methods being the use of tilting burners and gas dampers.

The adoption of power-actuated central controls tends to favour the wider use of fully automatic boiler control. Automatic sequence-controlled soot-blowers are another modern feature. On the manufacturing side, the possibility of making boiler tubes with longitudinal welds is forecast, while the more extended use of welding is an accomplished fact.

In America, there is a determined move to keep down capital costs by users agreeing to purchase large boilers of standardized pattern. An availability of 90 per cent, on an annual basis, is achieved, even with routine stoppages.

The use of tilting burners is one of the most striking features of present-day American practice, as a method of controlling superheat; burners are also arranged in tiers to enable the temperature to be controlled in high radiant type furnaces. A great deal of trial and error work is going on in attempts to find the

Mr. W. Borgquist, Sweden, opening the discussion on hydro-electric developments

best kind of alloy steel for superheater tubes; austenitic varieties are used comparatively seldom, compared with the ferritic grades.

In America the rising costs of both labour and fuel are having a powerful influence on boiler design. The quality of the fuel supplied to power stations has been an additional strong influence, as in Gt. Britain. To augment the amount of heating surface in a given size of boiler, the larger furnaces are now provided with a central tube wall. An attempt is being made to reduce the fly-ash from chimneys; and linked with this is the use of a cyclone furnace capable of burning a wide variety of low-grade fuels with an extremely low discharge of fly-ash; the aim is to keep the ash molten so that it can flow out continuously. Great developments in pulverized-fuel boilers have taken place in recent years, both in this country and in the U.S.A.; the present position seems to indicate that, where practicable, this system of firing is preferred above others, the unit mill system has been a feature of American boilers fired with pulverized fuel. A further factor in the American energy economy, which does not apply in this country, is the presence of large supplies of natural gas, which is often transmitted over considerable distances by pipe lines and used in thermal power stations.

Great Britain, India, Portugal, and Italy have useful contributions to make on the generation of steam in thermal power stations using inferior grades of fuel. In Great Britain spreader stokers, coupled with grit refiring, have been used to extract the energy from combustible matter in grits. This country has tried various systems of blending poor coal with better-quality coal before feeding the mixture to the stoker; in addition, a "sandwich system" has been used, in which gasworks breeze is burnt with washed slack. The use of steam to control the moisture content of small coal, so as to obtain the best combustion conditions, is a further line of attack. In addition there are two systems, oil-assisted ignition and steam-jet ignition, which have found application in the smaller units in private power plants.

India is carrying out researches into the extended use of producer gas, for driving engines in power stations, and into the

Mr. K. Friis, Norway, speaking on water power

employment of power alcohol and wood as fuels. In the Indian view, the smallest stations should be powered with petrol- or oil-driven engines; then come producer-gas engines for medium-sized plants; with steam power stations for the largest installations.

Portugal has supplies of anthracite having a very high ash content which has been successfully used in a compartmented stoker with grit refiring. In the middle of the grate a water-cooled agitator is located, driven by mechanical means. Italy's problem is that 85 per cent of her solid fuel requirements have to be imported; her indigenous supplies are chiefly Sulcis coal, which is best burnt on a chain grate (the larger sizes being pulverized), and small-size lignite with 21 per cent ash, 45 per cent moisture, and 25 per cent volatile matter. The Sulcis coal has a high sulphur content ($7\frac{1}{2}$ per cent); dust extraction is essential, and the use of wet systems must be ruled out.

The Swedish paper deals with combined gas-turbine and steam-turbine plants. It is proposed to place a gas turbine before the steam generator; the fluid in the gas turbine is to be the combustion air for the boiler. By rejecting its exhaust heat to the boiler the gas turbine is expected to produce energy at an efficiency of about 95 per cent. A normal boiler is envisaged, using solid fuel; oil is to be used for combustion in the gas turbine. The idea is most interesting; the chief difficulty will be to decide whether the higher efficiency achieved will justify the added initial cost.

Turbines and their auxiliaries are covered by nine papers, of which no fewer than four emanate from the United States. One paper, however, is quite distinct from all the others; it alone deals with mercury power plant, and tells us that the original Hartford plant (10,000 kW) of 1929 has been superseded by a new (1949) unit of 15,000 kW. The last example is a 40,000 kW unit for the Schiller station of the New Hampshire Company. An interesting process has been developed which causes the meniscus of mercury to be concave instead of convex, and enables it to wet the tube containing it. Standardization is made easy, since virtually the same turbine can be used in plants from which steam is required at greatly differing pressures. This is due to the limited variation in enthalpy at the turbine exhaust, over a considerable range in exhaust pressure.

Coming to orthodox steam turbines, in addition to the United States contributions, there are reports by Dollin (Great Britain) and Seippel (Switzerland), while Mulder (Netherlands) deals with cooling-tower calculations, and Heller (Hungary) and Flatt (Switzerland) with auxiliaries.

Standardization of turbine units is an obvious way of cutting costs, which receives due consideration. In Great Britain 30 MW and 60 MW have been made standard sizes by the British Electricity Authority, with the chance of 100 MW being made an additional size quite soon. In the U.S.A. 37.5 MW represents the limit for single-casing machines; a notable large plant contains a 153 MW tandem, compound treble-flow machine. Seippel mentions a 110 MW machine to run at 3,000 r.p.m. in a French station; it is of the three-cylinder quadruple-flow type. The tendency in America would be to use only three exhausts, up to 150 MW (3,600 r.p.m.); in the author's opinion the four-exhaust turbine is less costly than the double-exhaust variety.

The present tendency to adopt higher temperatures and pressures is reflected in several of the papers; several plants in the U.S.A. now use pressures of 1,800-2,000 lb/sq in and up to 1,050 deg F. The next advance, it is suggested, will be to 2,200 lb/sq in. If ever steam at 1,200 deg F can be used, the pressure will probably be the critical figure of 3,200 lb/sq in. Regarding blading, it is widely recognized that the greatest output of the turbine is fixed by the area of the last row of blades, so much attention is being given to this feature. Blading 23in high and running at 3,600 r.p.m. is used in America, mounted on a disc such that the tip speed is 1,395 ft/sec. The effect of wetness in the steam is noticed, and different methods of removing it are suggested.

There is general agreement, too, that a reheat cycle (full reheat), based on suitable assumptions regarding pressure drop, gives results similar to those which would be conferred by an extra 150 deg F, or so, in the initial temperature.

B.E.A.M.A. dinner to the World Power Conference delegates on Wednesday last week

Seippel makes an impressive argument for the turbine to be regarded as a complete unit, and points out that it is no good trying to redesign one row of blades at a certain cost when the same enhanced value could be better achieved by redesigning some other part.

Regarding auxiliaries, the paper by Mulder shows that in cooling towers, the difference in the heat in each unit mass of air, before and after it has passed through the water in the tower, is a measure of the force conveying the heat of the water to be cooled to the cooling air which ascends up the tower. Heller (Hungary) shows that better performance is to be achieved in a turbo-generator with a jet condenser than in one with a surface condenser, the water in the jet condenser being circulated on a closed cycle. Flatt (Switzerland) has suggestions for improving the performance of the auxiliaries of high-temperature high-pressure plants to give even efficiency at all loads.

B.E.A.M.A. Entertains Delegates

A dinner to delegates was given by the British Electrical and Allied Manufacturers' Association at the Connaught Rooms, London, W.C.2, on 12th July, when the guests numbered about 400. Sir George Nelson, president of B.E.A.M.A., was in the chair, and proposed the toast of "The World Power Conference." In the course of his speech he said that man's achievements in the development of the world's power resources in two hundred years had been magnificent, but so far had only been a scratching of the surface of the resources constantly available from the influence of solar light and heat. The next great phase of power development would come from the harnessing of energy from nuclear fission; later there might come energy released in building up matter.

Sir Harold Hartley, in replying, said he was a little apprehensive lest the enthusiasm and tremendously rapid development of scientific knowledge of nuclear fission should interfere with the immediate schemes of development of energy from sources which were more immediately at hand.

"The Guests" was proposed by Mr. G. Leslie Wates, chairman of the B.E.A.M.A. Council, responses being made by Mr. G. R. Strauss, Minister of Supply, and M. Ernest M. Mercier, vice-chairman of the International Executive Council.

A telegram regretting that he could not be present was read from Lt.-Col. R. K. Morcom, who was a member of the original organizing committee.

The official banquet at Grosvenor House, W., on the following evening was the largest of its kind held in London since the war. Sir Harold Hartley presided, and those present included Mr. Herbert Morrison, Lord President of the Council, and Mr. Philip Noel-Baker, Minister of Fuel and Power.

Mr. Morrison described the Conference as one of the first as well as one of the most successful attempts at international co-operation. Mr. William E. Warne, United States Assistant Secretary of the Interior, said that by the development of electric power resources, under-developed areas would be aided in achieving full partnership in the world community.

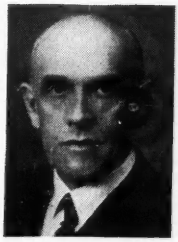
E.D.A. reception to Convention delegates at the Savoy Hotel on Friday last

Mr. Adolph J. Ackerman, vice-president, Hydro-Electric Construction, Brazil (U.S. delegation), Dr. O. Holden, Hydro-Electric Power Commission of Ontario, Mr. E. R. Wilkinson, chairman of E.D.A. Council, Mr. R. L. Hearn, general manager and chief engineer, H.E.P.C. of Ontario, Mr. V. W. Dale, general manager, E.D.A.

Festival of Britain

The 1951 *Stock List—Its Aim and Object*

By E. K. MUIR, M.I.E.E.



Mr. E. K. Muir is the Electrical Engineering Industrial Officer to the Council of Industrial Design

TO-DAY the preparatory work for the Festival of Britain Exhibitions has approximately reached the half-way stage. The central Exhibition on the South Bank of the Thames opens in May and closes at the end of September, 1951.

Many leading articles have appeared in the daily Press since this project was first launched and, as is only to be expected when a great new venture is in question, both appreciation and criticism are being voiced. A recent *Electrical Review* leading article indicates that the purpose of the 1951 Stock List and the method by which it is compiled are not clearly understood by some electrical manufacturers. It is hoped that this brief article, written at the invitation of the Editors, will clarify the lines upon which products are selected for inclusion in the Stock List. Although this article is specially written in answer to criticism raised by the electrical industry, the references to Stock List procedure apply equally to other industries.

Selection of Exhibits

The Council of Industrial Design is one of a number of bodies working through the special Festival of Britain Organization which has been set up to stage the six official Exhibitions and other Festival projects. The principal task of the Council is in connection with the selection of manufactured products to be shown in the Exhibitions, and in view of the special nature of the Exhibitions this has been no easy commitment.

The peculiar difficulty of selecting exhibits arises from two main causes. In the first place, both space and finance are severely limited, so that on these grounds alone a highly selective policy would have to be pursued. In the second place, the Exhibitions are to be "thematic": that is to say, they are to tell in visual form a coherent story of different aspects of the British way of life, and exhibits, chosen to illustrate this story, will therefore be shown chiefly in their user context. This is very different from the normal trade fair at which a manufacturer can buy exhibition space and the products of each industry are grouped together. It means that exhibits will have a double screening and will be chosen not only for their intrinsic merit, but for their suitability for interpreting a particular part of the theme.

Obviously in any enterprise as complex as this, the selection of exhibits must lie in the hands of a single impartial authority. It is equally clear that since the products of many different industries may be shown in the same section of the Exhibition, the designer who co-ordinates each display must be allowed the final choice if a homogeneous picture is to be achieved. The function of the Council has been, first, to see that the outstanding achievements of each branch of British industry are worked into the Exhibition theme; secondly, to ensure that the designers select exhibits only from among the finest products of each industry; and, finally, when an item has been chosen for exhibition, to make quite certain that the industry concerned is satisfied that it is functionally efficient and representative of a high standard of manufacturing technique.

Briefly then the Council's task is to watch the interests of industry in the Festival, and the first step towards achieving this aim has been to recruit a staff of officers, where necessary, with technical qualifications, chosen for their special knowledge and experience of particular industries. The writer of this article, whose job it is to survey the elec-

trical engineering industry, so that its finest products and achievements may be brought to the notice of the Festival, has been intimately connected with the industry all his working life and it is only natural that through him and the other qualified engineers on the staff the Council should work in the closest harmony with the leading electrical trade associations and authorities, such as B.E.A.M.A., E.L.M.A., E.L.F.A., C.M.A., E.D.A., R.I.C., T.E.M.A. and the British Engineers' Association. The writer is well aware of the rapid progress which has been made by the industry over recent years and fully appreciates the need for keeping in touch with the latest developments, so that nothing is overlooked which might suitably be incorporated in one of the Exhibitions. This case is typical of the way in which the Council has striven to bring each branch of industry into the Festival by employing men and women with an understanding of its problems and achievements.

Method of Compilation

The Council realized that to make a survey of industry would be of little value from the point of view of selecting exhibits unless it was supported by some visual record of products worthy of a place in the Festival. This is why the 1951 Stock List came into being. Through the trade and technical Press, in correspondence and personal talks with individual manufacturers and associations, and technical discussion groups and meetings with representatives of the leading manufacturing and research associations of each industry, the Council has explained that the Stock List is a pictorial card index of well-designed goods in current production from which exhibits will be chosen.

On all these occasions it has been emphasized that the first stage of selection lies with the manufacturer who is asked to submit photographs, or in certain cases samples, only of those products of which he is most proud, so that the general standard of the submissions reaching the Council is well above the average for industry as a whole. Moreover, a good deal of preliminary "weeding" is often done unofficially between the manufacturer and the Industrial Officer concerned before any formal submissions are made. This is why the proportion of articles rejected for the Stock List is in fact very low; the great majority successfully pass the Council's three-fold criterion of good design, in relation to appearance, functional efficiency and manufacture taken together.

The actual scrutiny of Stock List submissions is undertaken by teams of specialist officers concerned with a related group of industries. Each team is presided over by a technically qualified section head and frequently also by the Council's Chief Industrial Officer. Although both visual appearance and technical soundness are taken into account, the degree of importance attached to either of these factors will naturally vary according to the article in question. For a dress print, for example, appearance is the all-important consideration, whereas in the case of, say, electrical plant, functional efficiency will obviously be decisive; and indeed it is interesting to note that in the latter categories of products the proportion of articles rejected is even lower than in those industries where æsthetics is the chief concern.

The Council has been criticized for paying too much attention to appearance design at the expense of quality and performance, for preferring unusual foreign styles to traditional British designs, and for attempting to standardize design by imposing the views of a small group of specialists on an industry.

Fostering National Tradition

It can only be repeated that the Industrial Officers, with their qualifications and experience, are fully aware that fine feathers will not disguise a faulty structure; that far from wishing British manufacturers to plagiarize foreign fashions, the Council's policy has always been to encourage the vigorous growth of a sturdy national tradition of our own; and that the very nature of the Stock List Acceptance Committees, which are composed of officers covering upwards of a dozen different industries, only related to each other within very wide terms, prevents the imposition of a narrow standard and indeed fosters a lively and receptive attitude towards new ideas.

It is, of course, always possible to make mistakes in spite of the most praiseworthy intentions and the Council does

not pretend to know all the answers on technical matters. This is why the Council as a last safeguard has invited trade associations to set up small technical panels to scrutinize those items selected from the Stock List for exhibition, so providing a final check on the technical soundness and functional efficiency of every industrial product which will be shown. Thus, although it is not possible owing to the unusual nature of the Exhibitions for the manufacturer to dictate exactly which products he will show, the first and last words rest with him, or with his representative. Only the products which he believes to be his best will be considered in the first place for the Stock List and any article which the Industrial Panel believes to represent an insufficiently high standard of function or manufacture will be excluded from the Exhibition.

1951 Design Review

One last word. The policy outlined above was originally devised solely for the selection of Festival exhibits, but the Stock List which has grown up as an integral part of this policy has achieved so real a value of its own that it has been decided to put the entire index as it stands in May, 1951, on show, by some means of mechanical presentation, in the South Bank Exhibition. This means that every manufacturer whose products are worthy of a place in the Festival can have some representation in the South Bank Exhibition and not only those fortunate enough to make products which qualify also on grounds of suitability and for which space can be found.

In view of this the Industrial Panels are now being asked to extend their scrutiny to the entire contents of the Stock List. It is hoped that the result will be to give visitors to the Festival an impression of the high standard of design throughout the great range of British manufacture and to convince industry that, far from trying to impose any form of design dictatorship, the Council is only anxious to encourage and, where possible, assist manufacturers to design products that conform both in appearance and in mechanics to the age in which we live.

Measurement of pH

Standard Definition

AS a result of recommendations made at a conference called at the request of the Royal Society, B.S. 1647 : 1950 for pH scale has been issued and is available from the British Standards Institution, Sales Department, 24, Victoria Street, London, S.W.1, price 2s post free.

Originally, pH was intended to denote $-\log_{10} C_H$, where C_H is the hydrogen ion concentration. It is now realized that, if thus defined, pH is not measurable, and accordingly an operational and, to some extent, arbitrary definition has been adopted (Bates, *Chem. Rev.* 1948, 42,1). The object of B.S. 1647 is to ensure that, when different workers refer to a stated value of pH, they mean the same thing within ±0.005. This degree of accuracy is only attainable with aqueous solutions at temperatures between 0 and 60 deg C, and oxidizing agents or other highly reactive materials tend to reduce the accuracy.

The method of measurement is given, the primary standard being a 1/20 molar solution of pure potassium hydrogen phthalate, of which the pH is defined as having a value 4 exactly at 15 deg C. A list of six secondary standards is also included for the use and calibration of the glass electrode. The pH values adopted for the primary and secondary standards are those recently determined by workers in America, using the same technique as specified in this British Standard, and which are reliably known to an accuracy of ±0.005 (MacInnes, Belcher, and Shedlovsky, *J. Am. Chem. Soc.* (1930), 60, 1094; Hitchcock & Taylor, ibid, 1938, 60, 2710). It is desirable that this list of secondary standards should be extended, but additions are not possible until measurements are made with the hydrogen electrode, comparing the pH of solutions of these additional substances with the pH of the primary standard.

A.S.E.E. Guide

WE are informed by the Association of Supervising Electrical Engineers that a new edition of its Guide to the 12th edition of the I.E.E. Regulations for the Electrical Equipment of Buildings is in preparation, and it is anticipated that this will be published in the early autumn of this year.

PERSONAL and SOCIAL

News of Men and Women of the Industry

THE Minister of Transport announces that he has re-appointed **Captain Sir Ian Bolton,** Bt., O.B.E., and has appointed **Lt.-Col. S. J. L. Hardie,** D.S.O., LL.D., as members of the British Transport Commission on a part-time basis.

Mr. A. Regnauld, B.Sc., M.I.E.E., senior lecturer and superintendent of workshops at Faraday House, Southampton Row, London, W.C.1, is retiring at the end of the summer term. Mr. Regnauld received his technical education at Brighton Technical College and the Royal College of Science, and was a pupil with Yarrow & Co., Ltd., engineers and shipbuilders, with whom he subsequently became a draughtsman. After practical experience at sea as a marine engineer he joined the staff of Faraday House in 1910 as a lecturer, later becoming senior lecturer and superintendent of workshops. Mr. Regnauld is the author of "Modern Power Engineering" and he has been a frequent contributor to the technical Press, some of his notable contributions being on electricity on board ship and electric ship propulsion.

Mr. A. Regnauld

Mr. M. H. Taylor, managing director of Taylor, Taylor and Hobson, Ltd., has been elected president of the Scientific Instrument Makers' Association of Great Britain.

Mr. K. Ford, A.R.T.C., A.M.I.E.E., A.M.Inst.F., efficiency engineer at the Greenhill and Chadderton stations, North Western Division, British Electricity Authority, has been appointed deputy power station superintendent, with effect from 1st July. Mr. Ford served his apprenticeship with the Metropolitan-Vickers Electrical Co., Ltd. After holding positions with the North Eastern Electricity Supply Co. and Nottingham Corporation he joined the Yorkshire Electric Power Co., and eventually became efficiency engineer at both the Greenhill and Chadderton stations.

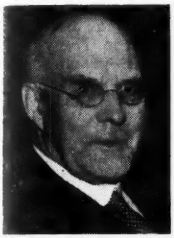
Mr. C. B. Meadowcroft, M.Inst.F., was appointed station superintendent of the Chadderton station, North Western Division, British Electricity Authority, on 1st July. He attended Salford Royal Technical College and also took part in courses at the Manchester School of Technology in electrical and mechanical engineering practice. Mr. Meadowcroft served his apprenticeship with the Salford Corporation Electricity Department, where he ultimately became acting charge engineer. He was later appointed junior charge engineer at Oldham, where he held the positions of charge engineer and assistant station superintendent before his present appointment. He was for some time publicity secretary of the Electrical Power Engineers' Association.

The North Western Division also announces the appointment of **Mr. L. Sewell,** the former deputy station superintendent, as station superintendent at the Greenhill generating station. He joined the Mexborough and Swinton Tramway Co. in 1907 and after a period with John Brown, colliery electrical engineers, he went to Morecambe as a switchboard attendant, and later he was employed at the old James Street power station, Carlisle. Mr. Sewell's next appointment was as shift charge engineer at Barrow-in-Furness. He subsequently took up an appointment as senior engineer in the private power station of Lochar, Ltd., Dumfries, and in 1920 was appointed charge engineer at Oldham, a position which he retained until he became deputy power station superintendent on vesting day.

Mr. C. B. Meadowcroft

Mr. L. Sewell

Sir Harold Hartley takes the place of Dr. W. Durand (U.S.A.) as the new president of the World Power Conference and he relinquishes the position of chairman of the International Executive Council of the Conference in which he succeeded the late Mr. D. N. Dunlop, first chairman. **Sir Vincent de Ferranti** has been elected chairman of the International Executive Council and the British National Committee.



Sir Harold Hartley

Sir Vincent de Ferranti

Sir George Usher, chairman of Aberdare Cables, Ltd., although an annual traveller between South Africa and Britain, recently made his first flying boat journey home by B.O.A.C. *Solent*. Lady Usher travelled with him. After nine months' residence in South Africa, Sir George and Lady Usher will spend part of the summer here and will return to the Union later in the year.

After forty years' service with the General Electric Co., Ltd., **Mr. W. M. Cranston,** manager of the Fan and Fractional Horsepower Motor Department at Witton, has retired. Mr. Cranston joined the Machine Design Department of the company in 1910 and in 1920 became assistant to the chief draughtsman of the engineering drawing office. In 1933 a self-contained department to handle fans and fractional horsepower motors was created and Mr. Cranston was appointed technical manager. On 4th July at a luncheon given in his honour at the Magnet Club, Witton, Mr. Cranston was presented with a cheque and an autograph album containing the signatures of his many friends and colleagues.

Mr. J. J. Gracie, C.B.E., general manager of the Witton Engineering Works presenting an autograph album to Mr. W. M. Cranston

Major D. E. Smith has been appointed director and chairman of T. Clarke & Co., Ltd.

Mr. J. F. Chaplin has been appointed district manager for Birmingham, Worcestershire, Shropshire and North Staffordshire of Walsall Conduits, Ltd. He has been connected with the company for twenty-two years and was previously branch manager at the Birmingham office.

Mr. J. F. Chaplin

Johnson & Phillips, Ltd., celebrated their 75th anniversary with a sports day on 8th July. The sports events attracted a large number of entries of a particularly high standard, while there were a number of comedy events. In addition to the sports the spectators were entertained by a team of high wire trapeze artistes and by a display by Alsatian police dogs. The Royal Artillery Band, conducted by Lieut.-Col. Owen Geary, Director of Music, R.A., played throughout the afternoon. Mrs. G. Leslie Wates, wife of the chairman of the company, distributed the prizes and presented the challenge shield to the Maintenance Department which repeated its success of last year. Dancing on the lawn and the presentation of a play by the dramatic section concluded the gala.

We are informed that **Mr. C. K. Pitt** has resigned his directorship of Veritys, Ltd., and is no longer connected with the management.

The Northmet Sub-Area of the **Eastern Electricity Board** held its first annual sports day at "Woodcroft," Winchmore Hill, on 15th July, when a crowd of several hundreds enjoyed an excellent afternoon's competitions, the athletics, including a number of inter-club items, being of high standard and keenly contested. The children had their own sports meeting as well as pony rides and Punch and Judy shows, and there were various amusement stalls. In a separate marquee an arts and

crafts exhibition was staged, the work of the staff and their families. The prizes were distributed by Mr. S. S. Scott in the presence of Mr. C. T. Melling, the chairman of the Board, Mr. W. N. C. Clinch and Mr. C. C. Hill.

The English Electric Co., Ltd., announces the appointment of **Mr. P. Scott** as publicity manager. Mr. Scott, who took up his new appointment on 10th July, has for the last five years been the sales and advertising manager of the Broadcast Relay Service organization. He has a wide experience of advertising, having previously been associated with Lever Bros., Lintas, Ltd., Allied Newspapers, Manchester, and Thos. Hedley and Co., Ltd.

Mr. P. Scott

OBITUARY

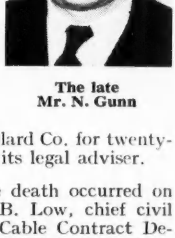
Mr. J. Priestly.—The death is announced of Mr. John Priestly, managing director of John Priestly, Ltd., Birmingham. Mr. Priestly was one of the pioneer distributors of radio and electrical equipment in the Midlands, and from 1920 to 1936 he was the founder-proprietor of Priestly & Ford, who were then operating under his control in Birmingham, Nottingham and Manchester. John Priestly, Ltd., will continue to operate as before.

Mr. Donald Smeaton Munro, M.I.E.E., a pioneer in electrical engineering in Scotland, died at Loch Awe on 8th July. Mr. Munro, who was seventy, was a native of Glasgow, and was educated at the High School, the University, and the Technical College. Working with his father, the late Mr. J. M. M. Munro, he gained a wide experience in ships, mines, factories, institutions and large country houses. In 1907 he was appointed manager of the Edinburgh branch of the engineering firm founded in 1840 by his grandfather, and in 1912 he took over the branch and carried on the business of electrical engineer in Edinburgh in his own name. He was editor of the *Scottish Electrical Engineer*, and his services were called upon on several occasions to act as arbiter and consultant. In 1928 he was chairman of the Scottish Centre of the Institution of Electrical Engineers. He was a founder member of the National Register of Electrical Installation Contractors and of the Edinburgh Electrical Society.

The late Mr. Donald Smeaton Munro

Engineer Vice-Admiral Sir John Kingcome, K.C.B., formerly Engineer-in-Chief of the Fleet, died on 15th July at the age of sixty. Sir John joined the Navy in 1905, and following various promotions became Engineer-in-Chief of the Fleet in 1945. He retired in 1947. Sir John, who was appointed to the South Western Electricity Board in 1948 and he was a member of the Institutions of Mechanical and Marine Engineers and of the Institution of Naval Architects.

Mr. N. Gunn.—The death occurred on 7th July of Mr. N. Gunn, director and secretary of Mullard Electronic Products, Ltd., and of its associated companies. Mr. Gunn joined the Mullard Radio Valve Co. as assistant to the managing director in September, 1924. He had, however, been connected with the Mullard Company since 1920 when he conducted the legal work involved in the incorporation of the company. Mr. Gunn was secretary to the Mullard Co. for twenty-six years, besides being its legal adviser.



The late Mr. N. Gunn

Mr. J. B. Low.—The death occurred on 6th July of Mr. John B. Low, chief civil engineer of the Power Cable Contract Department of British Insulated Callender's Construction Co., Ltd. Mr. Low was educated at Dunfermline High School and Edinburgh School of Art, and, subsequently, was articled to Mr. F. W. Deas, F.R.I.B.A. After serving with the R.F.C. in the Middle East during the 1914-18 war, Mr. Low joined the staff of Sir Alexander Gibb & Partners, for whom he carried out work in Scotland and, in the early days, at Barking power station. In 1929 he joined Callender's Cable & Construction Co., Ltd., now amalgamated into the B.I.C.C. group.

Mr. D. M. Fraser.—The death occurred at Biarritz on 14th July, at the age of 62, of Mr. David Mann Fraser, A.M.I.E.E., director of the Sun Electrical Co., Ltd., and manager of its Northern Area Branches. Mr. Fraser was apprenticed to Wm. Beardmore & Co., Ltd., of Glasgow, after which he went into business as an electrical con-

ractor. In the 1914-1918 was he served in the London Electrical Engineers Corps, the 1st London and Tyneside Electrical and Mechanical Coy, R.E. (T), and the R.E. Tunnelling Companies. On his return home after further service in Russia he joined John Birch & Co., engineers, Moorgate, E.C., and in 1923 commenced his long career with the Sun Electrical Co. as manager of the Leeds Branch; he became a director in 1944. Mr. Fraser was an old and active member of the Leeds Electrical Club and was past chairman of the Yorkshire Section of the Electrical Wholesalers' Federation.

I.E.E. ELECTIONS

New President, Council and Section Chairmen

THE Institution of Electrical Engineers has now announced the constitution of the Council and the Section Committees for the 1950-51 session. The new president is Sir Archibald J. Gill, B.Sc. (Eng.), F.I.R.E., Engineer-in-Chief and Assistant Director General (Engineering) of the General Post Office. Sir Archibald was born at Stoke-under-Ham, Somerset, in 1889, and was an engineering pupil with Yarrow & Co., Ltd., shipbuilders and engineers, Glasgow. He entered the G.P.O. Engineering Department in April, 1913, as assistant engineer and was attached to the Radio Section. He was appointed executive engineer in charge of the Radio Experimental Section at Dollis Hill in 1925, and became assistant staff engineer in 1929. Three years later he was appointed staff engineer of the Radio Branch, in 1944 he became Deputy Engineer-in-Chief and in 1947 he was appointed Engineer-in-Chief of the G.P.O. He has served as a member of the Radio Research Board and was chairman of the former Wireless Section of the I.E.E. in 1938.

Sir Archibald J. Gill

To fill the two vacancies of vice-president, Sir George Nelson (chairman and managing director of the English Electric Co., Ltd.), has been elected and Mr. H. Bishop, C.B.E., F.C.G.I., B.Sc. (Eng.), M.I.Mech.E., F.I.R.E. (chief engineer of the B.B.C.), has been re-elected.

The vacancies on the Council have been filled as follows:—Members: Mr. T. E. Allibone, D.Sc., Ph.D., F.R.S. (manager of the A.E.I. Research Laboratory), Prof. B. Hague, D.Sc., Ph.D. (James Watt Chair of Electrical Engineering, Glasgow University), Mr. H. D. MacLaren, C.B., D.F.C., B.Sc. (Director of Electrical Engineering, Admiralty), and Mr. C. E. Strong, O.B.E., M.A., B.A.I. (chief radio engineer, Standard Telephones & Cables, Ltd.). Associate member: Mr. R. A. Smith, M.A., Ph.D. (deputy chief scientific officer, Research Establishments, Ministry of Supply).

The following have been elected as officers and as Committee members of the various Sections:—

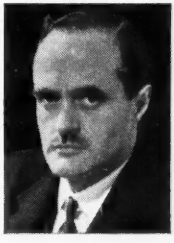
Measurements.—Chairman, Mr. G. A. V. Sowter, Ph.D., B.Sc. (Eng.); vice-chairman, Mr. L. Hartshorn, D.Sc.; members of Committee, Messrs. W. Bamford, B.Sc. (Eng.), S. F. Musson, B.Sc., L. G. A. Sims, D.Sc., Ph.D., A. H. Gray, M.Sc., and Prof. H. E. M. Barlow, Ph.D., B.Sc. (Eng.).

Radio.—Chairman, Mr. C. F. Booth, O.B.E.; vice-chairman, Mr. E. C. S. Megaw, M.B.E., D.Sc., B.Sc.; members of Committee, Messrs. E. C. Cherry, M.Sc. (Eng.), C. W. Oatley, M.A., M.Sc., M. J. L. Pulling, M.A., and P. H. Spagnoletti, B.A.

Supply.—Chairman, Mr. S. E. Goodall, M.Sc. (Eng.); vice-chairman, Mr. C. M. Cock; members of Committee, Messrs. J. Christie, P. M. Hollingsworth, M.Eng., H. V. Pugh, C. E. H. Verity, O.B.E., and Prof. M. G. Say, Ph.D., M.Sc.

Utilization.—Chairman, Mr. A. N. Irens; vice-chairman, Mr. J. W. T. Walsh, M.A., D.Sc.; members of Committee, Messrs. R. H. Cobbold, B.A., F. C. Fuke, J. Vaughan Harries, and A. G. Ramsey, O.B.E., B.Sc. (Eng.).

Sir George Nelson



Mr. H. Bishop

VIEWS on the NEWS

By REFLECTOR

THE Central Line of the London Underground Railways, which reaches its half-century on 30th July, bears little resemblance to the old "Twopenny Tube" as it was popularly called. Certainly the term would now be a misnomer for I believe there are no 2d ordinary fares. Originally the Central London Railway, it ran a distance of 5¾ miles, from Shepherd's Bush to the Bank, for a uniform fare of 2d to any station. Double-ended locomotives, resplendent in crimson and gold, hauled the early six-car trains, but the gearless motors, with armatures mounted directly on the axles, set up a great deal of vibration. Nor were the geared motors which followed very much better, and it was not until the locomotives gave place to multiple-unit control, in 1904, that a satisfactory solution was found. During the last war aircraft components were manufactured in a five-mile underground "factory," part of the uncompleted extension of the line to Ilford. The line now covers 34 miles, from West Ruislip to Epping.

★ ★ ★

A few weeks ago I wrote about press reports which indicated that householders were not taking kindly to the surveys being carried out by Electricity Boards as a prelude to the introduction of a uniform tariff. A member of the staff of the North Eastern Board who has undertaken this work tells a different story. In the latest issue of the staff magazine, the *Nor'-Easter* (an excellent production) he explains that he embarked upon the task with some nervousness, having read all about "snoopers." Consequently he was surprised to find that he was greeted with a cheery smile and all the people were ready and willing to co-operate in the task. As the "man from the Electric Board," he was regarded as a mobile information bureau. There is a suggestion at the present time that meter readers should be trained to fulfil such information duties, but I doubt whether the instruction would cover the questions asked of this contributor— prescriptions for gout, bunions and baby's rash; how to get a house, where to buy a good second-hand car, etc.

★ ★ ★

What is called by one newspaper the "battle of the cookers" is causing some stir in several areas in Scotland. It appears that where electric cookers and wash boilers are installed a lower charge is made for the supply than if electricity is used only for lighting, which seems to me to be quite a businesslike proposition. At Dundee the convener of the Housing Committee asked what would happen if the Gas Board came along with a similar "threat" and said: "You've got to have gas lighting as well as cooking, or pay an additional charge." Somehow I don't think that would be worth while.

★ ★ ★

"It's rather a tall job" is a description which aptly fits a task undertaken by the Salisbury District of the Southern Electricity Board. This is the installation of a set of eight red aircraft warning lights on the 404ft spire of the Cathedral. The cover of the July issue of the Board's magazine shows an electrician and mate engaged at the foot of the spire, and there is an interesting article on the subject by A. W. Cross. Pyrotenax cable is being fixed on the inside surface of the spire, direct from the meter position to the lamps, a distance of 1,320ft. Each lamp will have its own switch and fuse, and the whole spire will be separately metered. The gunmetal fittings, lamps and external wiring on the top 20ft outside surface of the spire will be fixed by the steeplejacks now working on the stone fabric. I am not very clear about how the renewal of the lamps is to be carried out, but concur with the writer that this job will be no sinecure.

ELECTRICAL CONTRACTING:
Organization and Routine

By H. R. TAUNTON, A.M.I.E.E.

9—*Estimating*

AN estimate is the first essential step to securing a contract, and the importance of its accuracy—of estimating on definite principles—cannot be over-emphasized. Anything else—guesswork, slip-shod approximation—means quoting too high and getting no orders, or quoting too low and getting no profit, and either leads to disaster.

It is true experienced estimators often use methods of their own by which, for small typical jobs, they are able to "jump a price" with a fair degree of accuracy. It will be found, however, that confronted with a large or unusual inquiry, they invariably return to the elementary principles on which their skill is founded. There is only one sure and logical method of estimating for electrical work: ascertain accurately the quantities involved, price them at net cost, allow for overhead charges, and so arrive at a total which represents the true dividing line between certain loss and possible profit.

The Estimates Book

All estimates, however small, should be written out in a book kept for that sole purpose. The common alternative of writing them on loose sheets, so that they can be filed later with the contract papers, has nothing to recommend it. Collected in a book they are not only safe from loss, but they are more easily compared with the actual costs of the completed job—an essential operation, too often neglected. Moreover, much labour on a new estimate can often be saved by referring back to a previous one for a similar job; and this is difficult unless the estimates are kept together in book form. A convenient ruling for this book is: (*a*) a wide marginal column for notes; (*b*) one for quantities; (*c*) the main one for particulars; and (*d*) a double set of cash columns, each with a "rate per" column, for labour and material.

In getting out an estimate it is advisable to follow an invariable method, so that nothing may be omitted—a not uncommon happening, resulting in orders the contractor would be happier without. The most logical method is to begin at the supply authority's cut-outs and work forward, step by step, to the switches and lamps, or other consuming devices. To facilitate comparison with other estimates and with the final costs, the working should be divided into a number of sections, depending upon the particular job and, of course, upon the form of tender. We will, for the purposes of illustration, assume that we have to estimate for the lighting (only) of a fair-sized office building, the wiring to be carried out in screwed conduit.

Suggested Sections

The first of the sections suggested will be (*a*) the mains and main gear down to, and including, the sub-fuseboards. From the supply cut-outs, we begin with the cables and conduit between them and the main switch-fuses, allowing for meter lights; then the main switch-fuses themselves and the main disboards, with the connections between them; then the various sub-mains; and finally, the local fuseboards.

One or two blank lines must now be left to provide for the totalling of this section; that is, if only one lump sum is to be submitted for the whole job. If, on the other hand, a separate price has to be given for this or any other section, more space must be left, to provide for its proportion of the general expenses—section (*d*) hereunder—and for calculations of the percentages to be finally added.

The next section (*b*) covers the circuit wiring, from the fuseboards down to the outlets. To arrive at the quantities involved, the obvious way is to plot out

each circuit on the plans and measure the various runs with all their details. That, however, takes time which a busy estimator can rarely afford, and though it is sometimes necessary, it can usually be avoided by measuring up a few representative circuits and assuming their average for the rest of the installation. In the same way, whereas to measure up the cable exactly would involve plotting out a wiring diagram, it is usual to save that labour by assuming a yard of cable for each foot of conduit, an approximation close enough for normal lighting jobs. Where there are special switching arrangements, however, as in theatre work, it is safer to measure up the cable separately. If the conduit runs are plotted on the plans, as they would be in such a case, they can be marked with figures, or small transverse dashes, to denote the number of wires each carries.

Alternative Methods

The quantities obtained, the section can be dealt with in two alternative ways. One, the more precise, is to write down the total length of each size of conduit and cable required, with a detail of the various conduit accessories.

The other method, accurate enough in experienced hands, is quicker and has certain other advantages. It is simply to tabulate the work as so many points of stated length: e.g., 80 pendant points, with switch drop, 18ft; 15 switch-plug points, 22ft; and so on, noting each different type and its average length.

Any group of points obviously differing in length from the average must be noted separately: for instance, in the office building we are here concerned with, a row of desk lights. When it comes to pricing the various points, the stated lengths are simply multiplied by a common factor arrived at by allowing for the known proportion of the sizes of conduit and cable per foot run. In practice this system is simpler than it sounds, and it has the advantage that it gives at a glance figures which are easily compared with those of other estimates of the same type and thus provides a check on their accuracy. Accuracy in this section is important, for it is usually the largest.

We have assumed above that the quantities are written down at the same time as the description of the various items. In practice it will usually be found more convenient to leave the quantities blank until the whole job has been itemized, unless they are obvious, as in the case of the main switch.

Theory and Practice

In measuring runs from plans it must be remembered that they may not always prove as short in practice as they appear on paper. The foreman who will have to carry out the work may be forced by the building construction to lay them out very differently to the simple ideals assumed by the estimator, who should therefore take into account as far as possible such facts as the direction of the floor timbers in an old building, or the position and sizes of beams and stanchions in a new one. He must be careful not to overlook vertical runs, such as switch drops, which do not show on a plan.

In section (*c*) we complete the installation by supplying and fixing the various switches, sockets, fittings, etc., detailed in the schedule of points, and by connecting them to the wiring already provided at each outlet. It is generally the easiest section to estimate, as it should involve no more than a listing of the items enumerated in the schedule. If the erection only has to be allowed for of special fittings covered by a P.C. or provisional sum, the appropriate entry should be made with, if necessary, details of the assumed quantities of the sundries needed for them. Plain pendants and other standard fittings are most easily dealt with as complete items: that is to say, the cost of one is worked out as specified and so many of each are entered at so much each.

Provisional and prime cost sums are more commonly found in this section than in any other. The distinction between them should be carefully observed. If the specification includes a *provisional* sum of, say, £100 for fittings, the true meaning is that the purchaser is prepared to spend £100 on fittings, whether bought from the contractor or elsewhere. It is intended to meet the contractor's invoice for the item to which it refers, and so includes his profit, in the shape of normal discounts. The estimator, then, need take no account of it in the body of his estimate, but should simply add it, unaltered, to the gross total, after standing charges and

profit on the rest of the contract have been calculated.

A *prime cost* sum, however, is a different matter. Here the intention is to define the actual net cost to the contractor of the particular item covered by it. If, then, the specification states that a P.C. sum of £100 is to be allowed for fittings—which, as a matter of principle, it ought not to do, unless the purchaser is entitled to trade terms—the estimator must include it in the net total on which profit has to be calculated.

General Expenses

Section (*d*) includes all general expenses involved in carrying out the contract, not always obvious from the specification. Some of the commoner items are: cutting away and making good, if this has to be undertaken by the contractor, and other builders' work, paint work, etc. As this is entailed almost entirely by the first and second sections, it is perhaps preferable to split it up accordingly, instead of entering it as one sum. Hire of ladders and trestles, if necessary, and of scaffolding and other special tackle. Consumable tools: hacksaws, files, jumpers, etc. Petty material, such as screws, solder, tape, and so on. This is so nearly proportionate to the cost of the various sections that it is easier to deal with it here as a whole than to split it up. Special carriages and cartages. Drawings and wiring plans, if called for. Country money and special supervisional expenses, if the job necessitates them. Cost of maintenance during the guarantee period. The last item may be considered as part of the standing charges.

Finally, there are "contingencies," a vague and unsatisfactory term. Some provision will always be necessary to cover extra costs arising from the unexpected, such as delays in delivery, minor accidents, and forced variations from the plans of the estimating department. The looser the specification, the more doubtful the conditions in which it will be carried out, the greater obviously must be the allowance to meet them.

Out-of-pocket expenses—railway fares, insurances, fees—which could not be shown on an invoice as carrying a profit, should be left to be added to the gross total of the estimate, at their net figures.

It is well to follow a certain pricing routine. After the itemizing and the quantities, the rates for all materials and labour should follow; then their extension to the cash columns; the estimating of the "general" items; and, finally, the totalling and the calculation of profit. Thus all the mechanical work with the ready reckoner is done at one operation.

Beginning again with section (*a*), the main gear, etc., is priced, of course, from makers' catalogues, allowing for the cost of the necessary drillings and tappings. The pricing of mains and sub-mains is a simple matter if prepared schedule rates per foot run are used. Otherwise—if circumstances dictate a special accuracy—they must be priced in detail.

Similarly, the circuit wiring in section (*b*), if it has been itemized according to the total lengths involved, may be priced either from schedule rates or in detail. If the alternative method suggested, of pricing the circuit wiring per point, is adopted, a rate per foot run having first been worked out, or assumed from experience, the lengths of each type of point already noted are simply multiplied by this basic rate to ascertain the price per point. This basic rate can be taken direct from prepared tables (see next article) if care be taken to make allowance for the larger proportion of accessories usually needed in circuit wiring, and for the varying number of wires per foot run.

Pricing Accessories

The pricing of the next section, "accessories," is, so far as materials are concerned, only a matter of entering up the net figures from convenient catalogues. In pricing these and other material, the estimator should allow, in addition to the trade discount, for any special quantity discount he can secure for the quantities needed for the particular job. He is, however, not entitled to allow for cash discounts, or for any rebates which depend on the year's results. These are items which affect, not prime costs, but overhead charges. The estimator cannot count on rebates at the beginning of the year, before they are earned by actual purchase; and to allow for them later, when they have been earned, would be confusing and illogical. It is better to leave them, and cash discounts and similar items, to benefit the annual profit and loss account.

ANGLO-DANISH CABLE

Submarine Co-axial Telegraph Channel

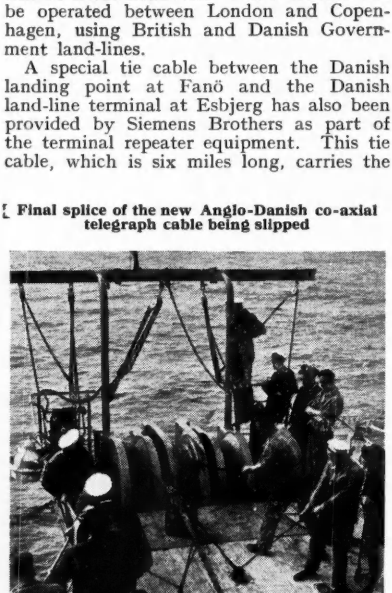
THE laying was completed on 12th July, by H.M. Telegraph Ship *Monarch*, of a new submarine cable between Weybourne (Norfolk) and the island of Fanö off the west coast of Denmark. The cable will form an important link in the telegraph system of the Great Northern Telegraph Co., of Denmark, for which it has been made by Submarine Cables, Ltd., at Telcon Works, Greenwich.

This is the first case of a co-axial cable being used specifically to provide voice-frequency telegraph transmission. It is also the longest co-axial cable yet constructed and the longest polythene insulated submarine cable in existence.

Siemens Brothers & Co., Ltd., are supplying telegraph terminal and repeater equipment which will enable nine simultaneous teleprinter circuits to be obtained initially. It is expected that with repeater equipment at the cable terminals only, upwards of 15 teleprinter circuits will be obtained. At a later date, after investigation of noise levels, a submerged repeater will be inserted in the cable, and then up to 36 teleprinter circuits will be made available. These circuits will be operated between London and Copenhagen, using British and Danish Government land-lines.

A special tie cable between the Danish landing point at Fanö and the Danish land-line terminal at Esbjerg has also been provided by Siemens Brothers as part of the terminal repeater equipment. This tie cable, which is six miles long, carries the "go" and "return" pairs for the telegraph circuits and, in addition, conveys a.c. at 50 c/s to feed the apparatus and also contains special wires for the remote control and position indication of the apparatus in the unattended Fanö hut.

Final splice of the new Anglo-Danish co-axial telegraph cable being slipped



The submarine cable is the type which has been used extensively by the British Post Office for Continental telephone traffic since the summer of 1945. The central conductor is a single copper wire surrounded by thin copper tapes, the diameter of the combination being 0.17in. This is insulated to a diameter of 0.62in with "Telcothene," a mixture of polyethylene and polyisobutylene specially developed and processed for submarine cable work. An outer conductor comprising six long-lay copper tapes is formed directly on the surface of the dielectric to provide a path of low resistance for the carrier frequencies to be transmitted. The six tapes are held in position by a short-lay copper binding tape, and the core is then served with tarred jute and armoured with twelve No. 2 (0.276in) galvanized iron wires. An outer serving of tarred jute completes the cable, which has an overall diameter of 1.75in and weighs nearly 10 tons per nautical mile in air.

For 500 fathoms seaward from each terminal station the outer conductor is insulated, before being served, with "Telcothene" of radial thickness 0.10in. This enables any extraneous currents which may be induced in the outer conductor near the shore to be controlled and minimized. As an added precaution against interference a lead sheath is applied to the short lengths lying in trenches between low-water mark and the cable stations. The number of armouring wires is increased to fourteen in the "insulated outer" portion and to sixteen at the extreme ends where the lead sheath is used.

The laid length of the cable is 306 nautical miles and the electrical characteristics per nautical mile at a temperature of 10 deg C are as follows: Resistance d.c. (centre conductor), 2.21 ohms; capacitance, 0.185 microfarad; insulation, d.c., 2×10^6 megohms; attenuation 0.34, 0.44, 0.52, 0.59 decibels at 5, 10, 15, 20 kc/s respectively.

The laying operations were commenced a month ago by the Great Northern Telegraph Co.'s cable ship *Edouard Suenson*, which then laid the two shore-end sections, each 25 nautical miles in length, in readiness for H.M.T.S. *Monarch* to lay the North Sea portion.

Electricity in the Navy

The Value of Service Qualifications

By Commander (L) F. A. BOOTH, R.N.

IN the *Electrical Review* of 28th April "Reflector" posed the question: "Of what value in civil life are Service qualifications?" and he specifically mentioned that an ex-Naval rating with a trade certificate as a Leading Torpedoman prompted this question. It is necessary, in order to give readers a fair picture of the whole problem, to provide a background of electrical history which leads logically to the answer to the question.

A visit to any modern warship would make it difficult to convince anyone that in comparatively modern times fairy-tale ships without electric power existed! It was not until the 1870s that electricity was introduced into warships as a major source of power, although small batteries were used for the firing of guns or mines some time before this date.

It is interesting to know that searchlights were the original reason for the fitting of dynamos into warships and, in fact, the candle power of the searchlight was the governing factor in the design of most of the equipment for some time. Dynamos were designed to suit and speed was adjusted as necessary, until the required light was obtained, fine adjustments being made by varying the position of the brushes. The dynamos were connected in "tension" (series) for high voltages, and "quantity" (parallel) for high current, depending on the arrangement of searchlights to be operated.

Early Lighting Installation

Voltages and current were of academic interest rather than any practical use, the weber being used until the ampère appeared in 1882. In 1881, H.M.S. *Inflexible* was fitted with a full-scale lighting system which consisted of 32 small arc-lamps in two circuits of 16 in series, and connected to the two searchlight dynamos. A "cribbage" peg-board system was the method used for handling power; switchboards were not used. H.M.S. *Inflexible* used 840 V for lighting and in 1882 the first fatal accident led to 220 V being recommended as the maximum to be used in warships.

Some of the early safety arrangements were most effective, but primitive. For instance, the widely fluctuating voltages caused by the way in which the lighting circuits were arranged led to a high wastage rate in incandescent lamps and it was decided that these lamps should be tested to twice their rated candle power —it being explained that such a safety factor was the normal practice in the case of ropes, etc.! Another safety precaution was the application of a dab of sealing wax to the field windings of a dynamo, the melting of which indicated that something should be done.

Radio Pioneer

It may also be of interest to radio enthusiasts to know that in 1896 Captain H. B. Jackson, R.N., in H.M.S. *Defiance* (one of the early training schools for "electrics"), working parallel with Marconi, forged the first links in the chain leading to the vast radio installations of to-day.

The progress of Naval electrics is a fascinating study, but it is not the object of this article, which is primarily to show what value Service training in this field is to the electrical industry to-day, and to see what type of person has followed its evolution from the primitive methods sketched above to the exact modern requirements which are met by the most complicated electrical, wireless and radar systems in modern warships.

In 1896, it was stated by Lieutenant Fiske, U.S.N., in a lecture at the U.S. Naval Institute: "Electrical apparatus can be relied upon provided two condi-

tions are fulfilled. The first condition is that the apparatus shall be designed to meet the particular circumstances in each case, the second is that it shall be cared for by men who understand it."

That this is still true needs no emphasis, and the "men who understand it" are just those people we are considering. Skilled maintenance was just as necessary to ensure the efficiency of those early equipments as it is to-day, and the difference is only one of degree. In the early days, the need was met by training selected personnel in the mysteries of electrics and since the first use of electricity was for the purpose of firing guns and mines and for demolition purposes, and because the searchlight was primarily an anti-torpedo defence measure, it was logical to select personnel from the Torpedo Branch for the more advanced instruction in electrics when this became necessary. Although some engine room personnel were given short introductory courses, the main instruction in "Electrical Management" was concentrated on selected Torpedo Ratings, and in 1882-3 this instruction was extended to all Torpedo Branch personnel.

It is of passing interest that the title of Electrician was first introduced into the Royal Navy in 1884. This title did not become an active service rate until 1901, when the official title was approved. Electricians were then comparable to Engine Room Artificers, and the title continued until 1912, when Electricians became Electrical Artificers—a title which they still bear.

Formation of Electrical Branch

The growth of Naval electrics under the ægis of the Torpedo Officers, the formation of a special Wireless Branch as an off-shoot of the same branch (subsequently transferred to the Signal Branch in 1917), the growing realization of the advance in technical knowledge required to ensure efficient maintenance of equipment which was getting more and more complex, leading finally to the formation of the Electrical Branch in 1946 to undertake *all* electrical maintenance, including wireless and radar, is a story in itself.

The new branch was formed from selected volunteers from certain other branches which, until then, had been charged with the responsibility for electrical maintenance, for example, Torpedo, W/T and Radar Branches. New standards were set for each rank or rating and courses designed to effect the change were instituted at the Naval Electrical Schools.

Recruits, who are entered directly into the new Branch, must reach a required standard at the entry examinations and are given highly concentrated training for their duties. This training is, of course, designed to make Electrical Branch personnel highly skilled maintainers, and in future to assist in the design of the equipments used in the Royal Navy. But since, in common with all Naval personnel, individuals are trained to think for themselves, fundamental principles, modern workshop practice and the proper use of tools is the basis on which the maintenance of these equipments is taught. It follows, therefore, that after a number of years of training and experience in the diagnosis, and rectification of faults of the many and varied installations used in the Royal Navy, the change to the new equipment in use ashore is a matter for familiarization rather than new ground to be broken.

Maintenance Requirements

It may be mentioned in passing that the advice of the electrical engineering profession was taken when the methods of training of personnel for this branch were being decided. It is not necessary to provide detailed syllabuses in order to show the extent of the knowledge required by the various grades in the branch, since such a method would defeat the writer's intention (which is that those interested shall read on to the end). It is sufficient to appreciate the vital fact that the "small town" electrical installation of a modern warship, complicated as it is by the addition of complex electronic computer systems, servo control systems, high-powered wireless and radar installations, must be efficiently and *self-sufficiently* maintained. To do this, there is no aspect of the whole science of electrics that can be omitted from the training of the various grades of the personnel concerned.

On leaving the Service all Electrical Branch personnel, except officers, are issued with the following documents:—
(a) *Service Certificate,* containing a full

record of service; (b) *Branch History Sheet*, showing courses undertaken and duties performed in each unit; (c) *Trade Certificate* of which there are eight to cover the different categories of ratings in the branch. These categories are:—Electrical Artificer, Electrical Artificer (Air), Radio Electrical Artificer, Radio Electrical Artificer (Air), Electrician, Electrician (Air), Radio Electrician and Radio Electrician (Air).

Each certificate shows in brief detail the individual's progress from the junior grade on entry to that attained on leaving the Service, together with the time spent in each stage. They show in a fairly concise form the standard of knowledge and experience of the person concerned. That they are couched in Service terms is not surprising since they are Service records, but it should not be difficult to translate these values into those used in industry, especially when one realizes that industry builds the equipments concerned and must therefore appreciate what is entailed in their maintenance under the peculiar conditions afloat, or at Naval air stations, in peace or war.

Although I may appear to have strayed a long way from the original question, "Of what value in civil life are Service qualifications?" I believe that without some knowledge of what lies behind the brief detail on these small slips of paper, employers cannot be expected to appreciate that it is an honest attempt to help them assess the value of prospective employees.

I have purposely refrained from comment on any of the correspondence following "Reflector's" note on this subject, since I wished merely to present the objective case from the Service standpoint. It is necessary, however, to correct any possible misunderstanding which may arise from the letter from Mr. C. H. Newton in the issue of 26th May. It is obviously impossible to produce a fully trained craftsman in the 18 months that a National Service man has in the Royal Navy. These ratings are given the same initial technical training as the normal entry, but since the second stage (to leading rate) in the normal career is not until after two years' experience in the first, no further courses are given to the N.S. men. This is, of course, obvious from the layout of the trade certificate, which shows progress, stage by stage.

The reference to training at the E.V.T. Centre (one of many such courses available to assist in the adjustment to civil life of men about to leave the Royal Navy) might also give the impression that Leading Torpedomen are still being released. This title is no longer used, but, as explained earlier in this article, such of these ratings as were transferred to the new branch were given new titles, and in most cases further courses to bring their standards to the new level.

Manchester Fuel Efficiency Exhibition

THE Minister of Fuel and Power, Mr. Philip Noel-Baker, has accepted an invitation to open the "Fuel Efficiency in Industry and Home" Exhibition to be held at the City Hall, Manchester, from 22nd November to 2nd December next.

The exhibition is being held under the auspices of the National Smoke Abatement Society. It will feature plant and appliances that promote better and more economical use of fuel of every kind, and is being planned to give full prominence to both the industrial and the domestic aspects. It will be the first comprehensive exhibition of its kind to be held since before the war, and the emphasis throughout will be on fuel efficiency, with smoke abatement generally implied rather than stressed. A national Advisory Committee, with representatives of the principal fuel organizations, manufacturers' associations, and Government Departments, has been set up, and a local Advisory Committee is being formed to arrange and co-ordinate organized visits, lectures, and film displays. Bodies likely to be interested are being invited to arrange for their members to visit the exhibition and where possible to hold meetings or conferences in the exhibition lecture hall. Bookings of space have already reached a satisfactory level, and boilers, stokers, furnaces, meters, recording instruments, etc., will be exhibited by the leading manufacturers. Gas, electricity and coal interests will be represented, and the scientific aspects of fuel utilization will be shown by the Fuel Research Station.

Inquiries for space should be addressed to the Organizers, Provincial Exhibitions, Ltd., City Hall, Manchester, 3.

CORRESPONDENCE

Letters should bear the writers' names and addresses, not necessarily for publication. Responsibility cannot be accepted for the opinions expressed by correspondents

Cables for Quarries

THE definition "metallic covering" in the Quarries General Regulations, 1938, No. 1233, means iron or steel *wire* armouring applied to cables or a rigid iron or steel, or other hard metal, tube enclosing conductors.

I interpret this to mean that p.i.l.c., s.t.a. cable is not suitable for use in quarries, and I should be grateful if someone could explain what there is against its use under these conditions, and what is the advantage of wire armouring over tape. V. G. BUTTON.

Warminster,
Wilts.

High-voltage Switch-fuses

WITH reference to my article on high-voltage switch-fuses printed in your issue of 12th May, I have been given to understand that at the time of publication of the article A.S.T.A. Publication No. 9 had not yet been finally approved. Will you, therefore, be good enough to inform your readers of this so that the position can be clarified?

K. DANNENBERG,
Director,
*London, N.*17. EMP Electric, Ltd.

Electrical Contracting

IN Part 8 of Mr. H. R. Taunton's series on "Electrical Contracting," which I have read with interest, there is, I think, a slip of the pen on page 1,270 (30th June issue) where it is stated: "Cables to be C.M.A. 600 megohm grade, rated for . . ."

As far back as January, 1937, the C.M.A. introduced their so-called "New Standard V.R. Cables" in which the classification by megohms was dropped, the cables being classified by the wattage at which they are designed to operate.

I am sorry that Mr. Taunton did not take the opportunity to give a summary of the technical and economic factors which have to be considered when deciding on the adoption of a particular wiring system. C. C. BARNES.

Ilford, Essex.

[Mr. Taunton, in regretting the use of the old classification, says that it arose out of his many years of familiar use of the "megohm" grading before the present "volt" grading was introduced. With regard to the second point, to have given anything like an adequate summary would have practically monopolized the space available for the whole article.

He also says that he should have mentioned the "Pyrotenax" mineral-insulated system in his reference to wiring systems.—Editors, *Electrical Review.*]

B.S.I. Activities

Expansion During Past Year

THE annual general meeting of the British Standards Institution was held on 11th July, when Sir John Anderson was elected president for the coming year.

Mr. Roger Duncalfe, chairman of the General Council, in presenting the annual report, explained that the work of all sections expanded during the year, both nationally and internationally. The B.S.I. had distributed nearly three quarters of a million copies of British Standards, had participated in a number of exhibitions, and the library and information service had developed substantially; the library now holds copies of about 43,000 overseas standards. Reference was also made to the growth in certification marking and to securing approval of electrical appliances for export to Canada. A further Oversea Committee had been set up in Rhodesia.

Mr. John Ryan, chairman of the Finance Committee, presented the accounts; income and expenditure (£214,000) had increased by 40 per cent over the previous year.

Sir William Larke, the retiring president, in his closing address, emphasized the need for the B.S.I. to remain an independent body, supported by all sections of industry and Government under the direct control of an elected Council. Sir William dwelt on the value of standardization to the community as a whole, and expressed the view that industry must recognize its responsibilities for maintaining this central organization.

Commerce and Industry

Engineers' Ballot Result

Brazilian Railway Contracts

THE result of the recent ballot of workers in the shipbuilding and engineering industries was announced at a meeting of the Executive Council of the Confederation of Shipbuilding and Engineering Unions last week. It showed a substantial majority in favour of submitting the claim for an all-round increase of £1 a week to arbitration as opposed to strike action (326,233 to 111,049). Afterwards Mr. Brotherton, president, stated that the Executive had decided to refer the matter to the Minister of Labour to take such action as he thought proper.

New Steel Prices Order

Maximum prices of a limited range of iron and steel products, mainly those affected by the recent increase in the price of nickel, are amended under a new Order made by the Minister of Supply. The Order (Iron and Steel Prices (No. 2) Order, 1950) came into operation on 17th July. The chief alterations are in the prices of alloy-steel billets according to quality; the Order also increases the prices of other alloy and stainless-steel products.

Royal Cornwall Show

The King and Queen, accompanied by Princess Margaret, made a twenty-five minute tour of the South Western Electricity Board's stand at the Royal Cornwall Show, Callington, on 12th July. The King, who had spent the previous day visiting Royal Duchy farms, was especially interested in the problems of providing supplies of electricity to farms, and made a detailed inspection of the agricultural machinery and appliances, many of which were shown to him in actual operation. His Majesty, who was escorted round the exhibits by Mr. S. F. Steward, C.B.E., chairman of the South Western Board, paid particular attention to the latest types of electric milking machines.

The Queen, who together with Princess Margaret arrived at the stand a few minutes later than the King, was escorted round the domestic exhibition by Mr. A. C. Owen, M.C., Cornwall Sub-Area manager. The Princess, however, decided to join the King in his tour of the agricultural section. The demonstration kitchen, which formed part of the centrepiece of the domestic section, proved of particular interest to the Queen, who discussed electric cooking with the demonstrator, Miss U. M. Robertson, of Torquay.

The Board had made all arrangements for giving an electricity supply to the showground, involving the installation of a 200 kVA transformer and the erection of a mile of l.v. distribution line. In addition, the Board had provided all the electrical equipment used in the Royal Pavilion which was specially erected for the King and Queen's visit.

Paterson Award Appeal

On Friday last the Court of Session, Edinburgh, delivered its deferred judgment on the appeal of the South West Scotland Electricity Board against an award of £52,408 to Mr. James Paterson (Clyde Valley Electrical Power Co.) for loss of salary and pension rights. The Court held

The Queen, accompanied by Mr. S. F. Steward, chairman of the S.W.E.B. (left) and Mr. A. C. Owen, Cornwall Sub-Area manager, at the Cornwall Show

that the award should stand except for a minor adjustment in relation to the pension side. The pension was a contributory one and as Mr. Paterson had not paid his contributions to 1954, which would have been the date of his retirement, an amount of about £1,800 should be deducted. It was accepted by the Court that the award should be based on Mr. Paterson's actual salary of £6,000 a year and not, as the Board contended, upon the minimum salary payable under his agreement—£4,500 a year.

Lead Price Increases

The Ministry of Supply announced last week two £4 increases in the price of good soft pig lead, raising the price to £96 per ton delivered.

E.D.A. Film to be Televised

The Electrical Development Association's Educational Film "What is Electricity?" will be televised in the B.B.C. afternoon programme on Thursday, 10th August. This film is among those chosen by the Standing Festivals Committee of the Association of Specialized Film Producers to be presented at the 1950 Venice Film Festival in August.

Electric Locos for Brazil

An order just received for another ten electric locomotives means that electric railway equipment for Brazil to a value of £720,000 will soon be going through the Metropolitan-Vickers factories. Fourteen 1,070 h.p. locomotives for the Mineira section of the Brazilian Railways (Rede Mineira de Viaco) in the State of Minas Geraes, are in hand, and ten similar locos have now been ordered for the Curitiba-Paranagua section (Rede de Viaco Parana Santa Catarina), which traverses the States of Parana and Santa Catarina. These are metre-gauge lines which are being electrified on the 3,000 V d.c. system, and the locos are designed for mixed traffic service. The electric driving motors, with auxiliary electrical machines, will be made at the Metrovick works at Attercliffe Common, Sheffield, and the control equipment at the company's Trafford Park works; the mechanical parts will be built at the Metropolitan-Vickers-Beyer, Peacock works at Stockton-on-Tees.

The new locomotives are 50-ton units of the Bo-Bo type, equipped with four 265 h.p. axle-mounted traction motors driving through rubber resilient gears. The one-hour-rated tractive effort is 7,280 kg (16,050 lb) at a speed of 40 km/hr (25 m.p.h.). The control will be electro-pneumatic with series-parallel combinations and field weakening. Rheostatic braking will be provided to hold the trains on the Serra gradients, which lie a few miles inland and rise to over 3,000ft in a distance of 25 miles. As high speeds up to 80 km/hr (50 m.p.h.) are required, the M-V swing-link suspension has been adopted in order to ensure continuous smooth riding on the metre-gauge track.

Kent County Show

One of the most popular exhibits at the Kent Agricultural Show at Maidstone last week was that arranged by the South Eastern Electricity Board, with the assistance of the British Electrical Development Association. Entry to the display, which occupied a 260ft by 60ft site was through a model farmyard provided with seats as well as an inquiry bureau.

Coloured operational diagrams were an effective feature of many of the separate sections, which covered poultry farming, hot water supply, the workshop, farm machinery, the kitchen, crop conservation, fruit

Entrance facia of the Seeboard's exhibit at the Kent Show. The group includes Mr. M. A. Bulloch, chairman of the S.E. Consultative Council; Mr. H. F. Knell, Kent Sub-Area manager; Mrs. Knell and members of commercial staff

storage, tomato ripening, the dairy, pumping and pig rearing. Items of apparatus attracting special attention were an egg-cleaning machine, time switches for poultry-house lighting, a pail heater, welding plant and a portable pneumatic grain conveyor.

Among a separate outdoor display were representative electric vehicles, including a pedestrian-operated type; greenhouse heaters, soil-warming apparatus and soil sterilizers; spraying plant; lawn mowers; electric fencers; sheep shearers and lighting fittings. About 2,800 persons saw an hour's showing of E.D.A. farming films.

All the milk produced during the show was handled in a model all-electric dairy, complete with cooling, sterilizing and storage plant. Refrigeration plant was particularly well represented among the displays of individual exhibitors of electrically operated farming equipment, who included S. W. Bligh, Ltd., the Hartford Electric Co., J. T. Herbert, Ltd., and Frigidaire, Ltd. Fruit-grading apparatus was demonstrated by W. Wilks & Son, Ltd., and Drake & Fletcher, Ltd. A range of electric motors was shown by Tilling-Stevens, Ltd.

Personnel Management

The Institute of Personnel Management announces a four weeks' course in personnel management to be held in Management House, Hill Street, W.1, commencing 23rd October next. The course will consist of two lectures daily, one by a university lecturer, the other by a personnel manager, visits to factories to study specified problems, discussion in groups and conferences. The director of studies will be Dr. C. H. Northcott. The tuition fees for the course will be £40. Each member will arrange his own hotel accommodation and will meet its cost and that of meals and travel. Applications should be made to the Secretary, Institute of Personnel Management, Management House, Hill Street, London, W.1.

Radio Window Competition

Additional facilities are being offered by E. K. Cole, Ltd., for students at art schools to enter the annual window display competition which the company runs every year for "Ekco" radio dealers. A portion of the prize money is being put aside to be won by art school students who design and execute a window display in accordance with the rules of the competition.

Works Visit

Members of the Association of Mining Electrical and Mechanical Engineers recently visited the Helsby Works of British Insulated Callender's Cables, Ltd. Among the guests were the president, Mr. R. Crawford (chief electrical engineer, National Coal Board); Mr. T. H. Williams (chief electrical engineer, East Midlands Division, and past president of A.M.E. & M.E.); and Mr. G. M. Harvey (consulting engineer, National Coal Board, formerly Chief Electrical Inspector of Mines). Mr. W. H. McFadzean (deputy chairman and chief executive of B.I.C.C.) presided at the luncheon, other directors present being Lieut.-Gen. Sir Ronald Scobie and Mr. H. J. Stone. The visitors were conducted on a tour of the factory, a feature of which was a representative display of products associated with the mining industry.

Appeal Allowed

The Court of Appeal has allowed the appeal by Paramount Supplies (Manchester), Ltd., Manchester, from the dismissal by Mr. Justice Lloyd-Jacob, in the King's Bench Division, of their action against Thorn Electrical Industries, Ltd., London, W.C., claiming £3,339 arising out of an alleged contract for the sale of 25,000 Paramount tapless chokes and 15,000 tapped chokes. A cross appeal by the Thorn Company against the judge's dismissal of their counter-claim for £3,343, alleged to have been overpaid in respect of deliveries already made, was dismissed.

The claim of the Manchester company was based on rights which they said had been transferred to them in a contract between the Thorn Company and a firm known as Paramount Products.

Lord Justice Jenkins, giving the judgment of the Court, said that they held that the Manchester company did become entitled to sue on the contract, there having been a novation which substituted them for the firm as a party to the contract.

There would be judgment for the Manchester company for the contract price of the chokes delivered but not paid for (which would have to be ascertained by inquiry if the exact figure were not agreed) and an inquiry as to damages in respect of the Thorn Company's refusal to take delivery of, and pay for, the balance of the chokes comprised in the contract.

Leave to appeal to the House of Lords was granted.

Colliery Year Book

Full information regarding the coal-mining industry and everything connected with it is to be found in the 28th edition of the "Colliery Year Book and Coal Trades Directory," which has just been published by the Louis Cassier Co., Ltd., Dorset House, Stamford Street, London, S.E.1, price 25s postage free.

In this 978-page edition a great deal of

new material has been introduced and many of the familiar sections have been amplified. To improve the geographical data, plans have been included showing production areas in each Division, and the section on opencast workings has been extended to give more detailed information. Gas undertakings affected by nationalization have also received special attention. The information contained in the list of former colliery owners is again included as it is still sought by many readers. Furthermore, all regular features have been carefully revised, thereby making the book a work of reference which will undoubtedly be of great service to all connected with the coal-mining and allied industries.

Trade Announcements

Mr. S. F. Rogers, who until recently represented Smart & Brown (Engineers), Ltd., has now joined **Herman Smith, Ltd.,** Reliance Works, Dudley, Worcs., and will cover North Wales and part of the city of Birmingham.

In addition to the territory for which **Barries Electrical Agencies, Ltd.,** already act as agents for **Reeves & Co. (Birmingham), Ltd.,** they have also been appointed sole agents for Northern and Southern Ireland.

Mr. J. Clegg, 59, Rotherwood Avenue, Glasgow, W.3, has been appointed by **B. & H. (Nottm.), Ltd.,** as their sole agent for Scotland.

Pyrotenax, Ltd., announce the opening of offices at 40, St. Enoch Square, Glasgow (telephone: Central 2238), under the management of Mr. D. Maclachlan. A demonstration department is provided where the properties and applications of "Pyrotenax" cable and accessories are demonstrated, and where instruction on sealing and installation methods is available to customers' electrical staff.

Overseas Manufacturing Arrangements

Mr. F. Lloyd-Kessel, managing director of H. Fisher (Oldham), Ltd., has recently returned from a tour of Europe, and as a result of this he has arranged new manufacturing centres for his company's products in Holland and Italy, while consideration is being given to similar arrangements in Germany.

Staff Bonus Scheme

The directors of Bulpitt & Sons, Ltd., paid out on 27th June the long service bonus customarily awarded to members of their staff. The Bulpitt bonus scheme was created by an allocation by the directors of company shares, the dividends of which are used to provide bonuses for employees who have completed ten years' or more uninterrupted service with the company. Payment is made annually at a flat rate of advance by grades starting at ten years and advancing by even periods of five years per grade. Participants this year number 268.

Annual Holidays

The works and offices of Gillott Electro-Steam Cookers, Ltd., will be closed for the summer holidays from 29th July to 8th August.

The works of Bill Switchgear, Ltd., Birmingham, will be closed for the annual holiday from 28th July to 9th August.

The offices and works of Morecambe Electrical Equipment Co., Ltd., will be closed from 28th July to 8th August.

Polystyrene Production

During this month Monsanto Chemicals, Ltd., will be starting production at its Newport, Mon, works of "Lustrex" (polystyrene), a thermoplastic for injection moulding which, judging by its rapid development in America, is one of the most versatile of plastics. Until now the only large-scale source of the material for British industry has been the United States and Canada, and a condition of its importation has been that 90 per cent of the end products should be exported. The manufacture of "Lustrex" at Newport should result in some relaxation of such restrictions on its home use and enable the export of plastic products to be increased.

In this country the manufacture of "Lustrex" will initially be based on imported styrene, but long-term requirements will be met by indigenous production. As announced earlier this year, Monsanto Chemicals, Ltd., and Petroleum Chemicals, Ltd., are jointly associated in the recently formed Forth Chemicals, Ltd., which will produce the required styrene monomer at a plant to be erected at Grangemouth, in Scotland.

Catalogues and Lists

Knightshades, Ltd., Montagu Road, London, N.18.—Seven priced leaflets illustrating decorative fluorescent lighting fittings, lamp shades, table lamps and bed lights.

Venner Time Switches, Ltd., Kingston By-Pass, New Malden, Surrey.—Priced folder on time switches for off peak water heating and industrial applications.

Turner Brothers Asbestos Co., Ltd., Rochdale, Lancs.—Technical brochure on the uses of asbestos textiles in the electrical industry.

RECENT INTRODUCTIONS

NOTES ON NEW ELECTRICAL AND ALLIED PROJECTS

"Screening" Television Sets

INTERFERENCE with radio reception caused by e.h.t. radiation from television receivers can only be satisfactorily eliminated by completely screening the television set. A practical means of doing this has been developed by ACHESON COLLOIDS, LTD., 18, Pall Mall, London, S.W.1. It comprises the application of "Lag" Dispersion 479, a quick-drying, water-based paint, to the interior of the cabinet.

Interference Suppressor Plugs

Mains-borne radio interference is claimed to be largely eliminated by 5 A and 15 A 3-pin suppressor plugs which J. H. TUCKER & CO., LTD., Kings Road, Tyseley, Birmingham, have brought out to B.S. 564 and B.S. 613. The plug pins are of the "Kwikwire" type, detachable for easy wiring, and the cord grip and cable entry are designed to avoid sharp bends in the flex at the point of gripping the outer covering. The suppression device, which is tested at 2,500 V a.c., is connected automatically when the cover is secured by the standard captive screw.

Warming Plate

The "501" warming plate made by TRICITY COOKERS, LTD., 109, Kingsway, London, W.C.2, measures 18½in by 8in by 3¾in and has a loading of 150 W. The standard finish is ivory vitreous enamel with black "Bakelite" handles, but other colours are available on request. The price is £2 5s.

(1) Tucker radio interference suppressor plug. (2) Thermolectric hot air sterilizer. (3) Tricity 501 warming plate

"Catarex" Pitch

A product of the Catarole cracking process, "Catarex" pitch, is now available from PETROCHEMICALS, LTD., 170, Piccadilly, London, W.1, with any specified melting point in the range from 40 deg C to 100 deg C.

This odourless and tasteless material has properties which in many respects lie between those of straight run petroleum bitumen and coal-tar pitches. It exhibits good bonding properties and when combined with the plasticizer may be used for the protection of metal surfaces. When blended with various "cut-back" materials, interesting properties may be obtained, and by combining this blending with a relatively light air-blowing process both the penetration and ductility of the pitch may be controlled.

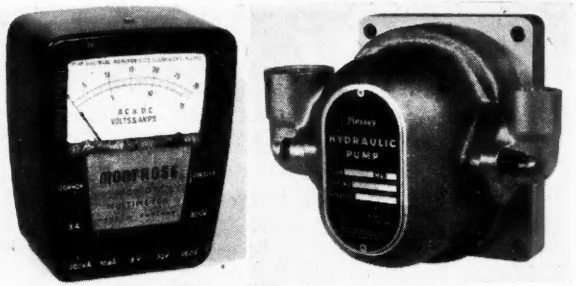
Hot Air Sterilizer

An electric hot air sterilizer for the bulk sterilization of hypodermic syringes is now being made by THERMOLECTRICS, LTD., Chapel Works, Hampton-on-Thames, Middlesex, and as the incorporated temperature control system is effective over the range of 35 to 200 deg C it can also be used as a bacteriological incubator. The 3 kW heating elements are totally enclosed in steel tubes and contained in a tray in the base of the oven and can be supplied for operation on all normal mains voltages within the range 100 V to 440 V. The temperature control system is based on the operation of a hot-wire vacuum relay and because of this the unit is suitable for operation on both a.c. and d.c. mains. The complete unit is housed in a white enamelled sheet alu-

minium cabinet measuring 58in high by 21in wide by 24.5in deep.

Multi-range Meter

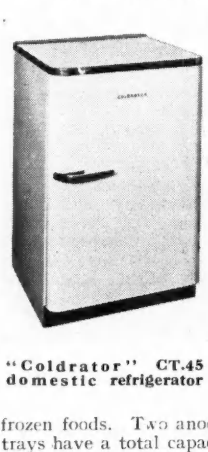
A pocket-sized moving-iron multi-range meter has just been made available by TAYLOR ELECTRICAL INSTRUMENTS, LTD., Montrose Avenue, Slough, Bucks. Housed in an attractive moulded case, this "Montrose" instrument has four voltage ranges—0 to 6, 30, 150 and 300 V a.c. or d.c., and three current ranges—0 to 3 mA, 300 mA and 3 A, also a.c. or d.c. A 1.5 V battery is also incorporated in the case of the instrument so that is can be used for continuity testing.



"Montrose" multi-range meter, and Plessey hydraulic pump

Domestic Refrigerator

The new "Coldrator" CT.45 domestic refrigerator made by the INTERNATIONAL REFRIGERATOR CO., LTD., Stanhope House, Kean Street, London, W.C.2, has a net storage space of 4.5 cu ft and a shelf area of 8.8 sq ft. The apparatus measures 24¼in by 24 (excluding handle) by 36in high, a toe space 3in high being provided beneath the door. A white acid-resisting porcelain enamel finish is used. The stainless steel freezer is fitted with a back and hinged door to give short-term storage for frozen foods. Two anodized aluminium ice trays have a total capacity of 4lb. The interior of the unit is automatically illuminated when the door is opened. The price is £65, plus £16 18s P.T. in the home market.



"Coldrator" CT.45 domestic refrigerator

Hydraulic Pumps

A range of industrial hydraulic gear type pumps introduced by the PLESSEY CO., LTD., Ilford, Essex, uses standardized and interchangeable parts to provide in three groups a choice of fourteen sizes which are arranged to give the widest practicable range of capacities. This adoption of standardization reduces the number of parts necessary to complete the range, while permitting a large degree of interchangeability and contributing toward flexibility of installation. It is claimed that these pumps have volumetric efficiencies ranging from 92 to 99 per cent, depending on operating conditions and also an overall efficiency of not less than 80 per cent.

Magnetic Recording Tape

A high-grade magnetic recording tape is now available from the GENERAL ELECTRIC CO., LTD., Magnet House, Kingsway, London, W.C.2, for use in British, American and Continental recording apparatus. It has a high tensile strength and is free from curl, stretching and layer-to-layer stickiness, the iron oxide layer being 0.0005in thick and controlled within close limits with regard to particle size and distribution.

Two grades are available, grade "A" being for "radio quality" recordings when run at a speed of 7.5in/sec, or "dictation quality" at half this speed. Grade "B" is for use in Continental machines based on German designs, the speed for "radio quality" being 15in/sec and for "studio quality" 30in/sec. It should be noted that the two grades are not interchangeable on a particular recorder.

Rotary Ironer

KENWOOD ELECTRICS, LTD., 151, Oxford Street, London, W.1, are to start production in September of a rotary ironer with 26in long roller. The heating elements are thermostatically controlled and the motor is embodied in the roller. The machine, which will be known as the "Electric Housewife," is light and easily portable and is mounted on a rubber base. Its price will be about 15gns, plus purchase tax in this country. A portable stand will be available as an extra.

ELECTRICITY SUPPLY

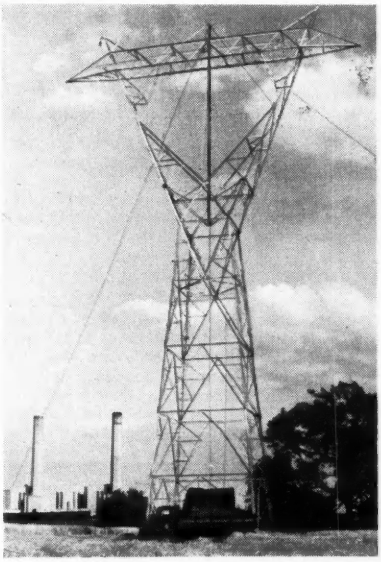
The 275 kV Line

Uskmouth Pumping Station

ERECTION of the first tower of the Staythorpe-Barnby Moor section of the 275 kV super-grid was completed on 7th July. This section of the line starts from the Staythorpe power station and is within the area of the East Midlands Division of the British Electricity Authority, under whose supervision the construction of the line is being carried out by British Insulated Callender's Construction Co., Ltd. The first tower to be erected was the straight-line tower on the first span at Staythorpe power station.

The route length of this section will be 20½ miles and, when completed, will comprise 99 towers. The normal height of the straight-line towers will be 85ft and the normal span length 1,000ft. There will be twin 37/.110-in steel-cored aluminium conductors on each phase, separated from one another by specially designed spacers. The spacing between the phase conductors will be 32½ft and they will be surmounted by two 19/.110-in steel-cored aluminium earthwires throughout the length of the line. The normal suspension insulator strings will comprise eighteen 11-in discs which will have an overall length of 127½in. At crossings the number of discs will be increased to nineteen. Duplicate strings of 10-in tension insulators, normally each comprising sixteen discs, will be fitted at angle and terminal towers and these sets will have an overall length of 136½in. At crossings the sets will be increased to seventeen discs.

The towers were designed by Blaw-Knox, Ltd., and fabricated by Painter Bros., Ltd.



First straight-line tower of the super-grid

Large Caisson

This week the work of sinking what is believed to be the largest pneumatic caisson in the world is being commenced at the site of the Uskmouth generating station, near Newport, Mon. To supply the circulating water for the condensers of the six 60,000 kW turbo-alternators, a pumping station is to be constructed housing circulating water pumps capable of supplying 15,000,000 gal/hr. The River Usk has a rise and fall of approximately 44ft—the second largest in the world—and as it is essential that the pumps should be able to circulate water at all states of the tide, the pumping station has to be sunk below the bed of the river.

The caisson steelwork, which is of welded construction throughout, weighs 580 tons. The shoe of the caisson has a peripheral cutting edge and there are also two internal cutting edges which divide the steel structure into three bays. These three chambers are connected by emergency access passages.

One of the problems in the construction of this caisson is that the foreshore on which it is to be sunk will bear very little weight. Because of this, the steel shoe of the caisson has had to be assembled on made-up ground back from the river bank, and then rolled into position on a bed of brick and stone rubble 6ft deep. This specially prepared bed is intended to prevent any tendency for the caisson to tilt towards the river during the early stages of sinking.

The caisson will then be sunk by excavating inside the working chambers at the same rate as the building-up of the concrete walls of the partitions of the pumping station structure. The excavated material will be taken out of each of the three working chambers by means of a fast two-ton electric derrick, working through air shafts provided in the chambers, and the level of the top of the concrete walls will be kept about 30ft above the mean tide level to prevent any possible flooding by an exceptionally high tide. On reaching a firm bed the sinking weight of the caisson will be in the region of 40,000 tons. Finally, the steel framework of the superstructure of the pumping station will be erected, and the overhead travelling cranes for handling the pumps and machinery will be installed.

Queen to Open Power Station

The £5,000,000 Loch Sloy hydro-electric power station is to be opened by the Queen in the autumn.

North Wales Schemes

The relief models of the North Wales area depicting most of the proposed hydro-electric developments, together with preliminary plans, photographs, etc., were on exhibition in Westminster Hall of the Houses of Parliament during last week.

A visit of Welsh M.P.s to North Wales has been arranged to take place at the beginning of August so that they may examine the areas and be given an explanation of the Authority's proposals.

s.s. "Lord Citrine" Launched

The latest of the British Electricity Authority's colliers to be launched honours the name of its chairman, and the ceremony was performed by Lady Citrine. The vessel, built by Wm. Pickersgill & Sons, Sunderland, is of 4,600 tons. Speaking at the launching, Lord Citrine said that the B.E.A. would have 47 colliers with a total carrying capacity of 123,000 tons in its fleet by 1952. At present 35 were in service. The requirements called for 7 million tons of coal to be shipped annually, and in addition to the Authority's own fleet it had 24 vessels on charter.

Objections to Substation

A proposal by the British Electricity Authority to erect a substation at Lower Stoneham Farm, near Lewes, to reinforce the grid supply to Lewes and district, has been under consideration by the East Sussex County Planning committee. Chailey R.D.C. has objected to the project on the grounds that the site is good agricultural ground, and that the substation would spoil the amenities. The owner of the land and the provincial land commissioner of the Ministry of Agriculture are also stated to be opposed to the scheme, and the Town Planning Committee is withholding its approval.

Kingston-by-Pass Lighting

Surbiton Highways Committee reports that the Ministry of Transport has decided on the installation of sodium lamps at the following roundabouts and junctions on the Kingston by-pass road: "Toby Jug" Hotel, "Ace of Spades," southern end of the by-pass at Esher, Malden Road junction, and at Robin Hood Gate.

Assisted Wiring

Merseyside and North Wales Electricity Board has received a representation from the Birkenhead Co-operative Party urging that it should introduce an assisted wiring scheme. The Board has promised to consider the matter.

Roosecote Power Station

The B.E.A. has received the consent of the Minister of Fuel and Power to the development of the Roosecote power station, Barrow-in-Furness, to its full capacity. The Minister's consent was given last October for the initial installation of plant in this station which, when completed, will have a total installed capacity of 120,000 kW, made up of four 30,000 kW turbo-alternator sets.

Refrigerator Plan Rejected

Malden and Coombe Borough Council has turned down a plan to install refrigerators in its permanent houses. It was stated that 184 out of about 230 tenants had indicated their willingness to hire refrigerators, but opponents contended that difficulties would arise through future tenants being unable to afford the rentals of equipment installed before their occupation. The London Electricity Board suggested that the Council should become the owners of the refrigerators by hiring them for seven years at 2s or 2s 3d a week, complete with cabinets and including maintenance.

Council House Installations

Approval by the Ministry of Health has been received by Wortley R.D.C to the installation of electricity in 1,292 pre-war houses at an estimated cost of £52,000.

Berwick (Northumberland) Town Council has received Ministry of Health sanction to spend £3,000 on installing electricity in 200 houses.

FINANCIAL SECTION

Company Notes and Stock Exchange Activities

REPORTS AND DIVIDENDS

Scottish Cables, Ltd.—In his statement circulated to shareholders, Mr. W. Fraser (chairman) refers to the incorporation of Scottish Cables (South Africa), Ltd., which has acquired from Rhodesian Cables, Ltd., their electric cable works at Pietermaritzburg, the cost being £500,000. Their company's holding of the capital of £600,000 of Scottish Cables (South Africa) is £235,000, in addition to which he subscribed £50,000 and his nephew £25,000. Their company's share in the acquisition will be financed by £135,000 from available funds of the company and the proceeds of the issue of the balance of the unissued 100,000 4½ per cent £1 cumulative preference shares. Consent of the Capital Issues Committee has been obtained for the issue of these preference shares. The association which now exists between their company and the South African company will permit of the manufacture in South Africa of all l.v. cables, including rubber-insulated cables, and will place their company favourably for continuing and expanding its export business to South Africa and the Rhodesias relative to high-voltage cables, together with ancillary equipment. Output during the year under review reached a new record, important contracts including cables for the North of Scotland Hydro-Electric Board and the British Electricity Authority. Their overseas trade output was again at a high level. Competition, however, from foreign countries, including Japan, is becoming more and more in evidence. Owing to the large volume of orders in hand, Mr. Fraser is confident that the current year's results will again be satisfactory.

T. Clarke & Co., Ltd., propose to pay a final dividend of 5 per cent, making 10 per cent, tax free, for the year. The postponed annual general meeting will be held on 12th September.

The Telegraph Construction & Maintenance Co., Ltd., is paying an unchanged interim dividend of 5 per cent actual, less tax.

The Oriental Telephone & Electric Co., Ltd., reports a balance on profit and loss account for 1949 of £74,960, as compared with £56,458 for 1948. Contingencies reserve receives £10,000, and tax equalization reserve £14,402. It is proposed to pay a final ordinary dividend of 12 per cent, again making 16 per cent for the year. The balance carried forward is £74,121 (against £73,740 brought in).

NEW COMPANIES

J. Stone & Co. (Charlton), Ltd.—Registered 11th July. Capital £100. To acquire that part of the assets, liabilities and undertaking of the business carried on at Charlton, S.E., by J. Stone & Co., Ltd., and to carry on the business of mechanical, electrical and general engineers, and in particular to manufacture and deal in all kinds of locomotive engines, motors, motor cars, etc. Directors: B. W. Preston, A. J. S. Brown, P. A. Peterson, B. H. Lancaster, F. McAlister, and A. H. Lewis. Regd. office: Anchor and Hope Lane, Charlton, S.E.7.

J. Stone & Co. (Deptford), Ltd.—Registered 11th July. Capital £100. To acquire that part of the assets, liabilities and undertaking carried on at Deptford by J. Stone & Co., Ltd., and to carry on the business of mechanical, electrical and general engineers. Directors: A. H. Chilton, W. J. Ruston, A. J. S. Brown, R. H. Lee, N. H. Morris, F. A. G. Powell-Jones, P. A. Peterson, S. K. Prestige, E. Kent, and J. F. B. Vidal. Regd. office: Arklow Road, Deptford, S.E.14.

LIQUIDATIONS

Thomas Duncan, Ltd., wholesale electrical distributors, 135, East Road, London, N.1.—A meeting of creditors was held on 12th July, when a statement of affairs was submitted which showed liabilities amounting to £1,315. The net assets were £757, leaving a deficiency as regarded creditors of £558. The issued capital of the company totalled £800 and, so far as the shareholders were concerned, there was a total deficiency of £1,358. A resolution was passed confirming the voluntary liquidation of the company with Mr. P. Phillips (Percy Phillips and Co.), 76, New Cavendish Street, London, W.1., as liquidator. A committee of inspection was also appointed.

Miller-Hepworth, Ltd. — Winding up voluntarily. Liquidator, Mr. J. Moss, 28, Queen Street, Manchester, 2.

FINANCIAL SECTION

STOCKS and SHARES

NOBODY could expect to find the Stock Exchange markets in anything but an unsettled mood with the discouraging news from Korea. The week opened badly from the point of view of stockholders. What buyers there were found, in most cases, that they could get their stock more cheaply than they expected. There seemed to be no great pressure to sell, but, on the other hand, support was lacking and, as a result, prices of active stocks and shares tended to give way. This was a marked condition of the gilt-edged group. There, the weakness had the effect of causing dullness in the leading industrials. Prices were marked down without any substantial amount of stock changing hands, and the majority of shares show falls as compared with a week ago.

Week's Changes

A drop of 3½ in International "Tel. & Tel." to 20, reflects the flatness which has overtaken prices in the Wall Street Stock Exchange, and a drop of 1s 3d in Cape Electric Tramways, to 15s, came about as a result of the weakness of South Africans generally, industrials and mining shares alike. Radio descriptions have been heavy with E. K. Cole 16s, Cossor 8s, Decca 13s, "Emi" 20s 6d, being 6d to 1s down. Ever Ready declined to 28s, Baldwins to 5s; Automatic Telephones fell 1s 9d to 57s 6d. Gt. Northern Telegraphs at 13 are 10s lower. On the other hand, Telegraph Constructions 38s 3d, Telephone Properties 20s, and De La Rue 24s 6d, show rises; Globe Telegraphs at 46s 6d are 2s higher on the week. Oriental Telephones at 42s are similarly better.

Telegraph Construction Dividend

The rise in the price of Telegraph Construction & Maintenance £1 shares showed appreciation of the fact that repetition of the interim dividend at 5 per cent represented, in cash, a 1 per cent increase in the amount paid last year on smaller capital. A 25 per cent capital bonus was distributed before the board made its decision on the final payment for 1949, which it reduced from 5 to 4 per cent in exact proportion to the capital increase. By the interim decision for the current year, the market is tentatively encouraged to assess the shares again on the 10 per cent annual dividend basis which was held for many years up to the time of the bonus. At that rate, the yield on the shares at 38s would be 5¼ per cent.

Company News

Full accounts now published by Hackbridge & Hewittic show that the 15 per cent dividend took less than a third of the net profit available for distribution and reserves; and that the payment of an extra 2½ per cent, as compared with last year, gave stockholders no more than £10,000 out of a profit increase of £60,000. At 14s 3d the company's 5s shares pay 5¼ per cent on the money.

Before and After

To illustrate the reasonably stout resistance of industrial shares to the new crisis, the following table compares present prices of a miscellaneous group of electrical shares with those ruling immediately before the Korean hostilities began:—

Ordinary Share	23rd June	10th July	Fall or rise
	s. d.	s. d.	s. d.
A.E.I.	77 3	76 6	−0 9
B.I. Callender's ...	32 6	31 3	−1 3
Crompton P. ...	12 3	12 0	−0 3
General Electric ...	84 0	82 6	−1 6
English Electric ...	46 6	45 6	−1 0
E.M.I.	25 3	20 6	−4 9
Pye defd.	34 3	35 0	+0 9
Ever Ready ...	28 6	28 0	−0 6
Auto. Tel.	60 3	57 6	−2 9
Lucas	30 9	31 3	+0 6
B.E.T. defd. ...	465	425	−40
Tube Invest. ...	6½	6	−2 6

Brush Electric New Shares

The new 5s shares issued at par to ordinary stockholders of Brush Electrical Engineering are available at a few pence premium on the issue price. They are currently free of transfer stamp to the buyer, and offer a yield of about 9½ per cent on the last dividend of 10 per cent. According to the company's statement, it should be possible to maintain that rate on the increased capital and still leave a good surplus for reserves. With an order book valued at £15 million, the board expects net trading profits to be not less, in the ordinary course of events, than those of the year before. The old shares were standing at 6s 9d about a month ago, and the new issue has found markets at their most unresponsive.

PARLIAMENTARY NEWS

By Our Special Reporter

IN the House of Commons last week, Mr. Prestcott asked the Minister of Fuel and Power if he would make a statement on the progress in Lancashire in changing from d.c. to a.c., particularly in the borough of Darwen.

Mr. Noel-Baker said that in 1930 the former Electricity Commissioners gave Darwen Corporation the necessary consent for the change from d.c. to a.c., and they gave similar consents to other undertakings in Lancashire at other times. Since the Electricity Act was passed the North Western Electricity Board had not asked him to consent to any change.

Rural Representation

Mr. Garner-Evans asked the Minister of Fuel and Power whether he would afford greater representation to the rural districts on the Merseyside and North Wales Electricity Consultative Council.

Mr. Noel-Baker said he was at present considering the appointment of some additional members of the Merseyside and North Wales Council and he hoped to increase the number of members from rural districts.

New Forest Station Site

In the House of Lords last week, Lord Marchwood asked the Government whether there was any truth in the report that the British Electricity Authority proposed to erect a power station on an extensive site at Marchwood in the New Forest, and, if so, whether the Minister of Town and Country Planning would inform the B.E.A. that he would not sanction the erection of large-scale industrial buildings in the New Forest area.

Lord Addison, Lord Privy Seal, said that, although the site had been indicated by the B.E.A. as being suitable and had, in fact, been selected by the Southampton Corporation before the vesting date, no definite proposal had been submitted, and if there were objections it was the duty of the Minister to hold a public inquiry. The site was two miles from the outer edge of the New Forest.

Electrical Interference

Mr. Deeds asked the Postmaster-General what progress had been made towards the setting up of an advisory committee in accordance with the provisions of the Wireless Telegraphy Act, 1949; and when regulations to cover electromagnetic interference with television sets might be expected.

Mr. Ness Edwards replied that separate advisory committees to advise him about the requirements which might be prescribed in regulations dealing with different classes of equipment were being set up. He hoped to be able to announce the names very shortly.

Mr. C. I. Orr-Ewing asked that amateur radio operators, who numbered 14,000 and paid £2 for their licences, should be given adequate representation and Mr. Ness Edwards promised to bear that in mind.

Shared Telephone Lines

Mr. C. I. Orr-Ewing asked the Postmaster-General how soon he would be able to install apparatus to ensure for shared telephone lines both secrecy and individual accounting.

Mr. Ness Edwards said that secrecy could only be provided at considerable additional cost. Individual accounting was now provided for about one-half of the 230,000 sharing subscribers, and this facility would be extended as quickly as the resources permitted.

Cardiff Television Transmitter

Mrs. Rees asked the Postmaster-General if he would indicate when the British Broadcasting Corporation would start work on the site for the Cardiff television transmitter.

Mr. Ness Edwards said that the B.B.C. was now negotiating for the purchase of the site at Cardiff, and expected that construction would begin as soon as the pre-contract work had been completed and the plans had been approved. The Corporation expected that this would be before the end of the year. The transmitters had already been ordered.

In reply to a further question by Mrs. Rees, Mr. Ness Edwards said that the link to the proposed television station at Cardiff would be provided by cable from London. Coaxial cables already being provided along most of the route would to a large extent be available for television.

Mr. Orr-Ewing said he had asked the Postmaster-General some months ago

whether he was going to use centimetre links or a coaxial cable, and the reply was that he had abandoned the coaxial cable and was going to use centimetre links. Did his present statement mean a change in policy?

Mr. Ness Edwards replied that the radio link could not be provided until a much later date. Parts of the coaxial cable were already laid, and it was thought best, in the interests of economy, to use that rather than to wait until they could get the radio link set up.

Domestic Installations

Mr. Baker White asked the Minister of Works if he was aware that there were now large stocks of all the material necessary for electrical installation work in houses and offices and adequate labour also available; and whether he would now abolish the restrictions on the amount of work that might be done.

Mr Stokes said that the need for restriction on capital investment, as announced by the Government last October, still existed and he was, therefore, unable to vary the Control of Building Operations (No. 15) Order, 1950.

Hardships in Rural Areas

Mr. Noel-Baker, replying to Mr. Perkins, said he was aware that the present restrictions on capital investment must prevent the Area Boards from extending their rural supplies as fast as both they and their prospective consumers would like. But the bringing of supplies to the more remote rural population was only one of the many forms of capital investment which would be increased as soon as the country could afford it.

Gold Coast Scheme

Replying to Mr. John Grimston, who asked the Secretary of State for the Colonies if he was yet able to say when the report on the Volta River hydro-electric and irrigation scheme in the Gold Coast would be presented, Mr. Cook said that the Gold Coast Government expected to receive an interim report very shortly.

AUSTRALIAN NOTES

From a Correspondent

THE Prime Minister (Mr. Menzies), announcing recently that a trade agreement had been completed between Australia and Argentina, said that it was expected that Australia would export electrical goods, appliances and spare parts to Argentina in the near future.

The Minister for Trade and Customs (Senator O'Sullivan) states that the Federal Government intends to get the most favourable conditions for the entry of Australian goods into world markets by tariff negotiations and trade discussions. He adds: "We also intend to get from overseas the maximum of raw materials, machinery and other goods essential to the development of Australia's primary and secondary industries. As soon as possible we will ease progressively the restrictions on the issue of licences for goods from hard currency areas. We will further examine the whole field of external trade controls to eliminate as many restrictions as possible."

Mr. Colin Clark, an eminent economist, said recently that the efficiency of Australian industries competing with imports was likely to be sorely tested in the near future. Australian industry could expect increasing competition from Germany and Japan, and it would have to become a great deal more efficient.

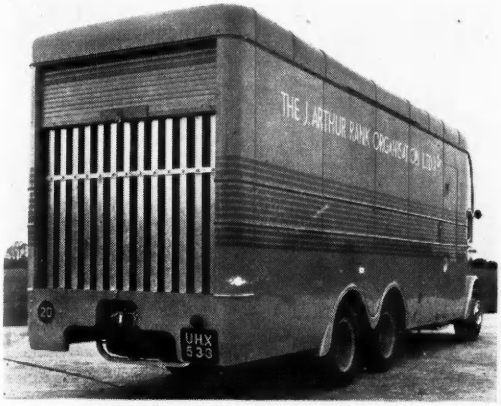
The Minister for Customs (Senator O'Sullivan) announces that a wide range of goods will be available from Western Germany under an extended import system introduced. Western Germany will now be treated as a soft currency area and import licences will be issued freely. The Federal Government has also arranged for the importation of substantial supplies of essential goods from Japan.

The Queensland Railway Department is planning the electrification of the Brisbane suburban railways and tenders will shortly be called for the power supply equipment and necessary rolling stock. The scheme is expected to cost at least £8,853,000.

The South Australian Government is also investigating the possibility of electrifying the suburban railway system of Adelaide, and a special public works committee is now going into details.

On 11th June Newcastle's 63-year-old electric tram service went out of existence, and buses now replace the entire system.

From 1st July electricity charges in Melbourne have been increased by 6½ per cent, and this will provide an additional £750,000 revenue per annum to the State Electricity Commission. Rates are now 27½ per cent higher than at June, 1948.

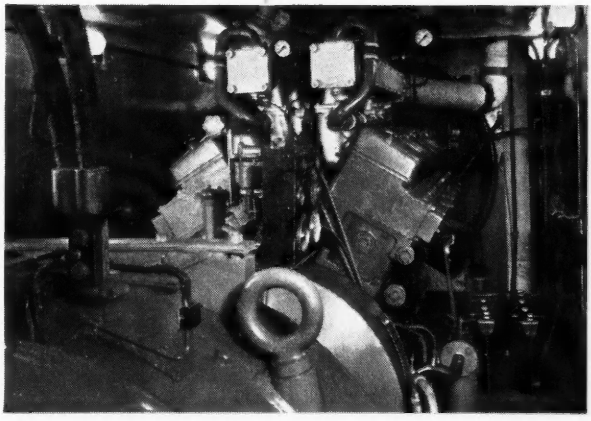


Mobile Film Generators

Quiet Operating Units for Location Work

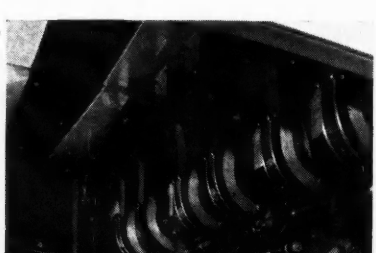
ONE of the principal difficulties with which sound film producers have to contend is extraneous noise. This applies especially to noise from generating plant, which, in view of the fluctuating loads of short duration and of high peak, it is customary from consideration of cost to install in preference to taking public supplies. At the film studios it is comparatively easy by suitably sound-proofing the studios themselves to overcome the difficulty but for work on location where fixed supplies are not available the necessity for having the mobile generating plant a considerable distance away has usually in the past rendered sound recording impossible. As a result it has been necessary to adopt the practice of post-synchronization which, besides being very expensive and inconvenient, frequently loses a good deal of its effect through the omission of authentic background.

This disability is overcome by the use of a mobile power unit which has been specially constructed for the J. Arthur Rank Organization by Lang Wheels (Manufacturing), Ltd., in collaboration with Mr. F. V. Hauser, the electrical and engineering adviser to the J. Arthur Rank Productions, Ltd. By paying special attention to sound-proofing and



Above: Mobile generator for providing power for making sound films on location

Right: The Paxman "Ricardo" oil engine is direct coupled to a 200 kW Lancashire Dynamo & Crypto generator. Acoustic material lines the walls of the body



The driver's cabin, showing the three circuit-breakers, busbars, ammeter, winding temperature indicator and air intake

otherwise eliminating noise and electrical interference, this unit can be safely used within 100yd of the location.

The generating plant comprises a Lancashire Dynamo and Crypto 200 kW 120 V d.c. generator (one-hour rating to keep down the weight) direct coupled to a 500 h.p. 1,250 r.p.m. Davey Paxman "Ricardo" oil engine which in order to reduce noise is run at 900 r.p.m. to give 300 h.p. Both engine and generator are resiliently mounted with ten Metalastik rubber units on the common underbed. The whole equipment is housed in a specially strengthened and adapted Foden chassis. The overall dimensions of the vehicle are 29ft 6in long by 12ft high by 7ft 6in wide.

The bodywork, comprising a steel framework with aluminium panels, is lined throughout with 6in of Burgess acoustical material. Air is admitted through an intake in the driver's cab and expelled through thirteen 6ft by 3ft 6in by 3in splitters (2⅛in apart) at the rear. When the engine is running at full speed 24,000 cu ft of air a minute passes through the compartment. Extra large silencers in series with snubbers mounted in the roof reduce exhaust noise to a very low level. When the generator is in use the engine compartment is completely closed off by means of specially designed inspection doors.

To prevent freezing of the 50 gal of soft water used for cooling system of the oil engine, tubular heaters fitted inside the vehicle can be brought into operation by connecting them to a mains supply.

Since the capacity of the generator is for a one-hour rating, thermocouples have been put into the windings to enable a watch to be kept on a Cambridge indicator to see that the temperature is not rising too rapidly. T.C.C. condensers are employed for smoothing purposes. A Foster switchboard incorporates all the necessary instruments and controls with pushbuttons for starting. The provision of three circuit-breakers permits the load to be spread and facilitates the setting up of one circuit while another is in use. Telephones have been installed for use between the mobile unit and the actual "set."

The new mobile power unit is fully booked up for use several weeks ahead.

British Plastics Exhibition

DETAILS of the British Plastics Exhibition and Convention in London next year are now announced. The date is 6th to 16th June, within the period of the Festival of Britain. The Exhibition, the first of its size and kind, will be held in the National Hall, Olympia, and while primarily for the trade, will be open also to the public. The exhibitors will be British and Commonwealth firms who produce, mould or fabricate plastics materials or supply raw materials or equipment to the plastics industry.

The Convention, which will run concurrently with the Exhibition, is being organized by a committee on which are represented the British Plastics Federation, the Plastics Institute, and the Plastics and Polymer Group of the Society of Chemical Industry.

A feature of the Exhibition will be an educational exhibit to enable the public to see clearly the true function and possibilities of plastics. An Exhibition "motif," symbolic of the British plastics industry, depicts a long-chain molecule of a plastics material surmounted by a lion. It will be used on all posters, brochures and advertisements. The Exhibition and Convention are being organized by *British Plastics*, an Iliffe group journal, with the full collaboration of the British Plastics Federation.

NEW PATENTS

Electrical Specifications Recently Published

The numbers under which the specifications will be printed and abridged are given in parentheses. Copies of any specification (2s each) may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2.

1944

14458. English Electric Co., Ltd., and Hassler, E. H. H.—Clamping device for rods, bars and tubes. 30th July, 1945. (642,081.)

15236. English Electric Co., Ltd., Brown, J. K., Hawkins, J. M., Weil, R. F. J., and Hassler, E. H. H. —Electric arc-welding device. 10th August, 1945. (642,082.)

25964. Cossor, Ltd., A. C., and Woodbridge, L. A. —Cathode-ray tubes. 15th December, 1945. (642,083.)

1945

17327. Burndept, Ltd., and Richardson, R.P.—Manufacture of electric dry batteries. 22nd October, 1947. (642,361.)

26106. Marconi's Wireless Telegraph Co., Ltd.—Television receiving apparatus. 6th October, 1945. (642,241.)

1946

14034. Philips Lamps, Ltd.—Indirectly heated cathodes. 9th May, 1946. (642,364.)

17744. France, H. G. De.—Electromagnetic apparatus for determining a direction. 13th June, 1946. (642,303.)

24097. Mécanique et Transmission Metran.—Keyboard impulse transmitter for step-by-step printing telegraph. 14th August, 1946. (642,090.)

26870. Philips Lamps, Ltd.—Radio navigational aid systems. 6th September, 1946. (642,094.)

27491. Radio Corporation of America.—Printing telegraph systems and apparatus. 12th September, 1946. (642,244.)

28250. Philips Lamps, Ltd.—Receivers for pulse-modulation signalling systems. 20th September, 1946. (642,095.)

28963. Bendix Aviation Corporation.—Thermionic valve circuit for the generation of a current varying linearly with time. 27th September, 1946. (642,373.)

33573. Nyrop, J.E.—Method of facilitating chemical processes by means of electrical discharges. 12th November, 1946. (642,335.)

36157. Standard Telephones & Cables, Ltd., and Kelly, R. — Electrical control equipment. 31st December, 1947. (642,375.)

1947

781. Igranic Electric Co., Ltd.—Electric switches of the multi-pole type. 9th January, 1947. (642,108.)

887. Igranic Electric Co., Ltd.—Thermally responsive electric circuit-controlling devices. 10th January, 1947. (642,109.)

3205. Philips Lamps, Ltd.—Radio beacons and beacon systems. 3rd February, 1947. (642,181.)

3435. Philips Lamps, Ltd.—Radio beacon systems. 5th February, 1947. (642,182.)

3490. Bendix Aviation Corporation. — Electromagnetically actuated reciprocating pumps. 5th February, 1947. (642,111.)

3674. Philips Lamps, Ltd.—Radio beacons and beacon systems. 7th February, 1947. [Addition to 642,181.] (642,183.)

3723. British Thomson-Houston Co., Ltd., Graham, D. H., and Hossle, A.—Electric motor control. 28th January, 1948. (642,309.)

4309. Standard Telephones & Cables. Ltd., and Rogers, D. C.—Electron-discharge devices. 13th February, 1948. (642,112.)

6263. Soc. Independante de Télégraphie sans Fil —Frequency discriminators. 5th March, 1947. (642,310.)

7844/5. Babcock & Wilcox, Ltd., and Zoller, R. E. —Power plant. 22nd March, 1948. (642,117/8.)

10607. Metropolitan-Vickers Electrical Co., Ltd., Huston, A. E., Davies, D., and Sunderland, R. F.—Selector switches for electrical resistance networks. 18th March, 1948. (642,314.)

21840. Remington Rand, Inc.—Dry shavers. 8th August, 1947. (642,324.)

22772. Parsonage, S. H.—Heating element for electric resistance furnace. 13th August, 1948. (642,141.)

25536. Standard Telephones & Cables, Ltd.—Circuits for operating on electric waves. 19th September, 1947. (642,146.)

25601. Soc. Anon. pour les Applications de l'Electricité et des Gaz Rares, Etablissements Claude-Paz & Silva.—Processes for manufacturing electric-discharge apparatus. 19th September, 1947. (642,147.)

26808. Standard Telephones & Cables, Ltd., Reeves, A. H., and Earp, C. W.—Electric pulse communication systems. 1st October, 1948. (642,330.)

27446. Kent, Ltd., G., and Medlock, R. S.—Apparatus for assessing the amount of a gas of relatively high magnetic susceptibility contained in a mixture of gases. 7th October, 1948. (642,156.)

27857. Naamlooze Vennootschap Philips' Gloeilampenfabrieken.—Radio beacon transmitters. 17th October, 1947. (642,158.)

29721. British Thomson-Houston Co., Ltd.—Refrigerant flow controlling devices. 7th November, 1947. (642,163.)

33249. Electrolux, Ltd.—Refrigerators or the like. 17th December, 1947. (642,170.)

34243. Berthier, E. A.—Automatic electric circuit-breakers. 24th December, 1947. [Addition to 635,516.] (642,175.)

34402. Etablissements Merlin & Gerin.—High-tension compressed gas switch. 29th December, 1947. (642,176.)

35063. Nechvatal, V.—Thermal electric switch. 31st December, 1947. (642,178.)

1948

946. Sprague Electric Co.—Electrical condensers. 12th January, 1948. (642,184.)

1993. Fairweather, A., and Thomas, J. F. P.—Electrical relays. 21st February, 1949. (642,186.)

2694. Westinghouse Electric International Co.—Direct current motor control systems. 29th January, 1948. (642,337.)

3520. Wiegand Co., E. L.—Electrical heating elements and process of making same. 6th February, 1948. (642,192.)

3861. Wiegand Co., E. L.—Electric heating units. 10th February, 1948. [Cognate application 3862, 23rd August, 1941.] (642,264.)

4777. Metropolitan-Vickers Electrical Co., Ltd.—Voltage control circuits. 18th February, 1948. (642,341.)

4961. Micafil Akt.-Ges.—Condenser with a laminated dielectric thickened at its marginal portions. 19th February, 1948. (642,267.)

6251 and 6253. Birlec, Ltd.—Induction furnaces 28th February, 1948. (642,199/200.)

7416. Cole, Ltd., E. K., and Burnard, C. L.—Magnetic sound recorders. 11th April, 1949. (642,349.)

11529. Nilsen, Cromie Proprietary, Ltd.—Fusible electric cut-outs. 27th April, 1948. (642,275.)

11739. English Electric Co., Ltd., and Welsh, R. J. —Gas turbine plant. 27th April, 1949. (642,215.)

11805. General Electric Co., Ltd., Humber, Ltd., Thorley, T., and Nelson, H. M.—Hardening of steels

and like materials employing high-frequency induction heating. 30th May, 1949. (642,392.)

11891. General Electric Co., Ltd., and Earp, W. A. —Electrical frequency-multiplying arrangements. 17th March, 1949. (642,216.)

13708. Westinghouse Electric International Co.— Electroplating. 20th May, 1948. (642,101.)

13904. Simplex Electric Co., Ltd., Allpress, H. S., Hunt, J. J. H., and Osborn, F. W.—Connection boxes for electric conductors. 23rd May, 1949. (642,393.)

17732. English Electric Co., Ltd., Frankel, A., Gross, W., and Wolff, P. H. W.—Connection of spigoted components of multi-stage compressor rotors. 24th June, 1949. (642,287.)

17909. Ballantyne, D. H., and West, H. E. W.— Gas turbine or jet engines. 23rd June, 1949. (642,229.)

21251. Lehmann, N.—Clothes washing machines. 12th August, 1948. (642,235.)

22540. British Thomson-Houston Co., Ltd.—Electric kettles and the like. 26th August, 1948. (642,290.)

23401. Stivin, J.—Method and device for concentrated heating by induction currents. 6th September, 1948. (642,292.)

23421. Teddington Controls, Ltd., and Martin-Hurst, W. F. F.—Fluid-pressure-operated electrical switching devices. 6th September, 1949. (642,396.)

23611. English Electric Co., Ltd., Hughes, J. O. P., and Wolff, P. H. W.—Mounting of gas-turbine units. 2nd September, 1949. (642,294.)

23695. Westinghouse Brake & Signal Co., Ltd.— Rectifier circuits. 9th September, 1948. (642,295.)

Amended Specification

631,713. Standard Telephones & Cables, Ltd., & ors.—Electromagnetic contact-making relays.

TRADE MARKS

APPLICATIONS have been made for the registration of the following trade marks. Objections may be entered within a month of the dates mentioned:—

5th July

POLIFLOR. No. 687,458. Class 9. Electric floor polishers.—C.C.A. (Vacuum Cleaners), Ltd., 109, South Street, Ponders End, Enfield, Middlesex.

CAVALIER. No. 687,571. REMBRANDT. No. 687,572. Class 9. Radio and television apparatus, all included in Class 9.—Warner Howard, Ltd., 125, Edgware Road, London, W.2.

ARGONAUT. No. 687,945. Class 9. Electric arc welding apparatus and parts included in Class 9.— The British Oxygen Co., Ltd., Bridgewater House, Cleveland Row, St. James's, London, S.W.1.

SUPREX. No. B688,111. Class 9. Crucibles.—The Morgan Crucible Co., Ltd., Battersea Church Road, London, S.W.11.

LUXOLITE. No. 684,392. Class 11. Fittings included in Class 11 for electric light installations.—The Franco-British Electrical Co., Ltd., 15-17, King Street, St. James's, London, S.W.1.

12th July

SILVERCROWN (design). No. 678,916. Class 7. Electric dynamos, polishing machines (not domestic), centrifugal drying machines, and filters being parts of machines.—Silvercrown, Ltd., 5, Lauriston Road, Wimbledon, London, S.W.19.

BL (design). No. 672,314. Class 9. Wireless aerials, radio and television amplifiers, radio interference suppression devices, electric terminals and plugs, connectors, fuses and fuse holders, radio valve holders, thermal delay switches, lightning arrestors and transmission lines for television aerials.—Belling & Lee, Ltd., Cambridge Arterial Road, Enfield, Middx.

ALCO. No. 675,395. Class 9. Engine-driven electric battery chargers.—Arthur Lyon & Co. (Engineers), Ltd., 18, Telford Way, Westway Estate, London, W.3.

HYFLO. No. B680,118. Class 9. Electric make-and-break switches—A. K. Williams, Victory Works, Newbold Road, Chesterfield.

CREDA COMET. No. 687,840. Class 11. Electric cooking stoves.—Simplex Electric Co., Ltd., Broadwell Road, Oldbury, near Birmingham.

Consultative Council Meetings

Southern.—Alderman E. W. B. Gill, deputy chairman of the Southern Electricity Consultative Council, asserted at a meeting at Reading last week that electricity produced in London was sold to the Southern Electricity Board at too high a rate. It was decided to ask the Minister of Fuel and Power to receive a deputation with a view to an adjustment. In reply to previous representations the British Electricity Authority had stated that it would be necessary to vary the structure of the tariff already in operation, and it was not satisfied that this would be warranted. In any case, it could only apply to the current year with the unanimous agreement of the Area Boards, of which there would clearly be no prospect.

The meeting discussed assessment of houses for the new tariff. It was reported that a man at Lyndhurst, Hants, would not allow officials to enter his home, and the deputy chairman said that any person could refuse admission, but the penalty was that he would remain on the flat rate, and would not be able to go on to the new tariff.

London.—It was reported at last week's meeting of the London Electricity Consultative Council that the Board's annual report for the year ended 31st March last had been considered and agreed. Among the matters which have been under discussion by the local committees of the Council is the desirability of a uniform system of street lighting for the whole of London. It was pointed out that street lighting was the responsibility of local authorities and the Ministry of Transport, but that the Board would take such steps as were within its power to promote uniformity.

Eastern.—By invitation of the Electrical Association for Women the Eastern Electricity Consultative Council held its recent meeting at the E.A.W. headquarters, and a short address was delivered by Dame Caroline Haslett. The question of allowing the Press to attend local committees was raised by Mr. S. A. Bailey, of Norwich, who said he could think of no legitimate objection to this. The chairman, Mr. W. J. Bennett, pointed out that the Council had already recommended the Minister of Fuel and Power to make the necessary amendment. It was agreed to write to the Minister again. Mr. Bennett said that the position with regard to the increase in bulk supply charges was to be discussed with representatives of the Board.

CONTRACT INFORMATION

Accepted Tenders and Prospective Electrical Work

CONTRACTS OPEN

Where "Contracts Open" are advertised in our "Official Notices" section, the date of the issue is given in parentheses.

Alton.—3rd August. U.D.C. Three automatic electrically operated water-boosting plants of 60/90 g.p.m. and one of 30/80 g.p.m. capacity. G. H. Webb, surveyor, Council Offices.

Ashford (Kent).—19th August. U.D.C. Erection of street lighting columns. (See this issue.)

Australia.—BRISBANE.—7th September. City Electric Light Co., Ltd. 33 kV lead-covered cables. (C.R.E. (I.B.) 59151/50. Ten/1437.)*

24th August. 44 kV, 750 MVA outdoor-type switchgear. (C.R.E. (I.B.) 59152/50. Ten/1442.)*

31st August. 6,600 V and 415 V indoor metal-clad switchgear. (C.R.E. (I.B.) 59116/50. Ten/1445.)*

6th September. Queensland State Electricity Commission. Low-pressure circulating water valves. (C.R.E. (I.B.) 59115/50. Ten/1443.)*

Belfast.—18th August. Electricity Department. Two vertical axial flow circulating water channel pumps. (See 14th July issue.)

Bridgnorth.—4th August. Borough Council. Electric lighting and power installations in fifty-three pre-war council houses. Borough surveyor, College House.

Damascus.—2nd August. Director-General, Syrian Posts, Telephones and Telegraphs Department. Telephone cables, jumper wire and distribution boxes. (C.R.E. (I.B.) 58810/50. Ten/1424.)*

East Retford.—Corporation. Lighting equipment for trunk road A.1 within the borough. (See 14th July issue.)

India.—MADRAS.—16th August. Mysore Government Stores Purchase Committee. Four 300 kVA transformers. (C.R.E. (I.B.) 58649/50. Ten/1422.)*

NEW DELHI.—9th September. Director-General of Industries and Supplies. Electric cranes. (C.R.E. (I.B.) 58779/50. Ten/1429.)*

Irish Republic.—DUBLIN.—30th August. Port and Docks Board. Electric cranes. (C.R.E. (I.B.) 58871/50. Ten/1428.)*

New Zealand.—3rd October. State Hydro-Electric Department. 10,000 kVA transformer bank. (C.R.E. (I.B.) 58658/50. Ten/1421.)*

21st November. Two 30,000 kVA synchronous condensers. (C.R.E. (I.B.) 58655/50. Ten/1419.)

Pakistan.—KARACHI.—4th August. Department of Supply and Development. Lead-covered cable. (C.R.E. (I.B.) 59266/50. Ten/1452.)*

Queensbury and Shelf.—8th August. U.D.C. Sodium lighting equipment. (See this issue.)

Romford.—31st July. Corporation. Electrical installation in a public convenience. (See 14th July issue.)

South Africa.—5th August. Worcester Municipal Electricity Department. E.h.v. switchgear and ancillary equipment. (C.R.E. (I.B.) 58125/50. Ten/1404.)*

Stoke-on-Trent.—1st August. Corporation. Electric lamps for the six months ending 31st March, 1951. City surveyor, Town Hall.

Wiltshire.—County Education Committee. Electrical installation in proposed infants' school, Bemerton Heath, Salisbury. (See 14th July issue.)

ORDERS PLACED

Durham.—County Education Committee. Electrical installation in additional classrooms at Burnopfield County School (£111).—Falconar, Cross & Co., Ltd. Electrical installation at the Hookergate Grammar School (£168).—Storey & Crowe.

London.—L.C.C. Installation of electricity in 268 flats in Duke's Court and York Street, Westminster, and Skelton Street, Holborn.—Arthur Scull & Son, Ltd.

South Shields.—Corporation Children's Committee. Electrical installation in premises in Westoe Road, South Shields (£100).—A. J. Wares, Ltd.

CONTRACTS IN PROSPECT

Particulars of new works and building schemes for the use of electrical installation contractors and traders. Publication in this section is no guarantee that electrical work is definitely included. Alleged inaccuracies should be reported to the Editors.

Acton.—Rebuilding war-damaged premises; J. K. Farnell & Co., Alpha Toy Works, Uxbridge Road.

Bangor.—Arts and crafts blocks at college for North Wales Counties Training College Committee: C. W. Glover & Partners, architects, 54, Victoria Street, London, S.W.1.

Batley.—Houses (72), Staincliffe estate; borough surveyor.

Belfast.—Geology department at Queen's University (£100,000); J. MacGeagh, architect, 23, Ocean Buildings, Donegall Square East.

Berwick (Northumberland).—Houses (40), Prior Park estate; J. H. Pierce, builder.

Birmingham.—Dwellings (118), in five contracts, Booth's Lane estate, Perry Barr; H. J. Manzoni, city engineer, Civic Centre.

Bournemouth.—County secondary school, West Howe; borough architect.

Brandon (Durham).—Factory additions for Hirst & Thackway, Ltd.; F. Hedley, architect, Farnley Mount, Neville's Cross, Durham.

*Specifications may be inspected at the Commercial Relations and Exports Department, Board of Trade, Thames House North, Millbank, S.W.1 (Victoria 9040).

Brighton.—Extensions to the General Hospital; T. Ruddiman Wood, architect, 27, Queen Anne Street, London, W.1.

Bruton (Somerset).—Farmhouse and set of farm buildings, Godminster Lane, for County Council; R. O. Harris, county architect, Park Street, Taunton.

Caernarvon.—New police headquarters, for Standing Joint Committee; county architect, County Offices.

Caterham.—Flats (12), Godstone Road, and 14 houses and 12 flats, Crewes Avenue; U.D.C. surveyor.

Cheshunt.—Houses (102) for Edmonton B.C.; borough engineer, Town Hall, London, N.9.

Chester.—Infants' school, Blacon; C. Greenwood, city engineer, Municipal Offices.

Chichester.—Five pumping stations, etc., in connection with main drainage of East and West Wittering, for R.D.C.; Howard Humphreys & Sons, engineers, Victoria Station House, Victoria Street, S.W.1.

Coventry.—Dwellings (44), Radford & Green Lane areas; D. E. E. Gibson, city architect, 1a, Warwick Row.

Dagenham.—Two-storey flats, Sedgemoor Drive; Wates, Ltd., 1,258, London Road, Norbury, S.W.16.

Devizes.—Housing scheme, Home Farm estate, Hartmoor; J. D. Sheasby, borough surveyor, The Chequers.

Dewsbury.—Secondary school, Bank Top; borough architect.

Dudley.—Extensions (£25,000) at Lingwood Hostel, St. James Road, for Staffs C.C.; T. Payne & Sons, Ltd., 31, Churchfield Street, Dudley.

Gateshead.—Flats (48) and 12 houses near Springwell Road, and 212 houses on Leam Head site; chief architect, Municipal Buildings.

Haddington.—Operating theatre unit and ward accommodation at Roodlands Hospital, for East Lothian Hospitals Group Board of Management; F. W. B. Charles, architect, 3, Great Stuart Street, Edinburgh.

Heywood.—Coach building factory at Birch for Heywood Motor Co., Ltd.; Parker & Calvert, Ltd., Pine Street, Heywood.

Hounslow.—Flats (36), houses (50) and maisonnettes (44), Hounslow West estate, for Heston and Isleworth B.C.; Building & Public Works Construction Co., Ltd., Swindon, Wilts.

Huddersfield.—Maternity and child welfare centre, South Parade; city architect.

Hull.—Factory, Reform Street industrial estate; Domestos, Ltd., Albion Row, Newcastle-on-Tyne, 6.

Departmental stores, for Co-operative Society; W. A. Johnson, architect, C.W.S., Balloon Street, Manchester.

Ilkley.—Adaptations at Wells House Hotel for training college for domestic science teachers (£120,000); West Riding county architect, Wakefield.

Lichfield.—Houses (34), Wheel Lane estate; Sabin & Young, Ltd., Walsall.

Liverpool.—Extensions to biscuit factory, Aintree; W. & R. Jacob, Ltd., biscuit manufacturers, Walton, Liverpool, 9.

Longbenton.—Houses (76) at Crossley Street, for the U.D.C.; M. J. Liddell and Son, builders, 36, Great North Road, Newcastle-on-Tyne.

Lowestoft.—Extensions, for Zephyr Engineers, Ltd.; Meen & Collis, architects, Station Road, Beccles.

Maesteg.—Houses (64), Turberville site; E. Davies, U.D.C. surveyor, Council Offices, Talbot Street.

Manchester.—New offices, Cheetwood Road, for Regional Hospital Board; A. Cassel & Sons, Ltd., 1/3, Teneriffe Street, Salford.

Meriden.—Houses (100), at Nuneaton Road, Arley; H. Pickering, R.D.C. surveyor.

Newbury.—Houses (134) and 36 flats, Love Lane; borough surveyor.

Newcastle-on-Tyne.—Reconstruction of confectionery works for C. Leach and Co., Barrack Road, Newcastle; T. Hutchinson and Co., builders, Elswick Road.

Orphanage, Adderson Crescent, for trustees of Northern Counties Orphanage; W. Stockdale, architect, 73, Howard Street, North Shields.

Norwich.—Block of 24 three-storey flats, Harmer Road, Catton Grove estate; city architect.

Nottingham.—Twin operating theatres at City Hospital; J. W. Stamp & Co., Bobbers Mill, Nottingham.

Oldham.—Further 104 houses; borough engineer.

Oxford.—New college of education for T.C.; Donald Smith and Seymour and Rewley, consulting engineers, 15, Balham Park Road, London, S.W.12.

Plymouth.—Children's home, Pennycross; city architect.

Portland.—Dwellings (92), Verne Common, for U.D.C.; Remma Constructions, Ltd., builders, Milford Manor, Salisbury.

Preston.—New buildings and adaptations at Longridge, for use as residential school for subnormal children (£30,000); county architect, Fishergate Hill, Preston.

Rochdale.—Grammar school at Balderstone; E. Taylor & Co., Ltd., Littleborough, Lancs.

Royton (Lancs).—Houses (34), Launderbrook site; L. Cookson, U.D.C. surveyor, Town Hall.

Runcorn.—Houses (18), Lambsickle Lane, for U.D.C.; Rapid Brick Construction Co., Ltd., 3, Cook Street, Liverpool.

Salford.—Adaptation of "Kersal House," Kersal, and "Fernwood," Park Road, Pendleton, as hostels for aged (£18,000); city engineer.

Sedbergh.—Houses (46), Cautley Road and Long Lane, for R.D.C.; Malcolm G. Shaw, architect, 45, High Street, Kendal.

Sedgley.—Six shops and maisonettes, Turner's Hill, Lower Gornal, for U.D.C.; Lavender, Twentyman & Percy, architects, 2, Waterloo Road, Wolverhampton.

South Shields.—Secondary technical school; J. Wilks, architect, 29, King Street.

Sunderland.—Health centre at Thorney Close (£75,000), additions to Thompson's Park day nursery (£8,000), and occupational centre for mental health (£20,000); borough architect, Stockton Road.